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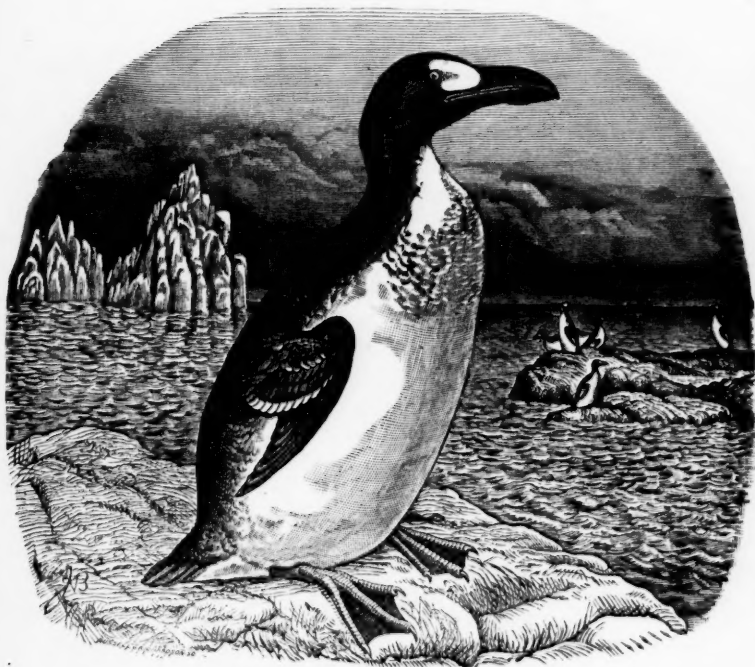
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VOLUME XXIV

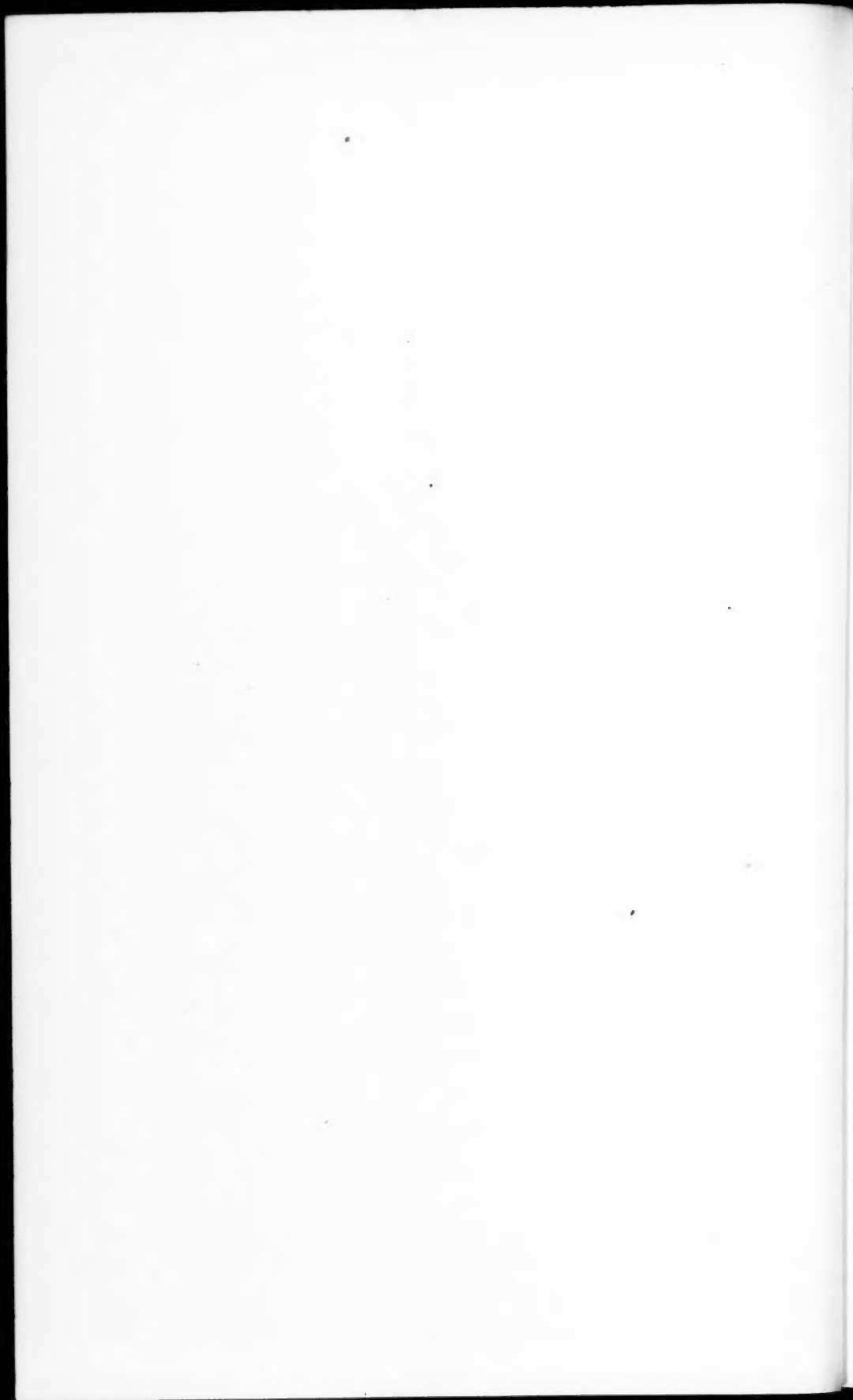
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GOELDI, Dr. EMIL A., 36 Zieglerstrasse, Bern, Switzerland.....	1903
GRANDIDIER, ALFRED, 6 Rond-Point des Champs Elysées, Paris....	1883
GRANT, WILLIAM R. OGILVIE, 29 Elvaston Place, London, S. W.....	1899

GURNEY, JOHN HENRY, Keswick Hall, Norwich, England.....	1883
HARTING, JAMES EDMUND, Edgewood, Weybridge, Surrey, England..	1883
HAYEK, DR. GUSTAV VON, Vienna.....	1884
HELLMAYR, DR. E. C., Zoölogical Museum, Tring, England.....	1903
HENSON, HARRY V., Yokohama.....	1888
HUDSON, WILLIAM HENRY, Tower House, St. Luke's Road, West- bourne Park, London, W.....	1895
IHERING, DR. HERMANN VON, Museu Paulista, Sao Paulo, Brazil....	1902
KNUDSON, VALDEMAR, Kauai, Hawaiian Islands.....	1888
KRUKENBERG, DR. E. F. W., Würzburg, Germany.....	1884
KRÜPER, DR. THEOBALD J., University Museum, Athens, Greece....	1884
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MACFARLANE, ROBERT, Winnipeg, Manitoba.....	1886
MADARÁSZ, DR. JULIUS VON, National Museum, Budapest, Hungary.	1884
MENZBIER, DR. M., Imperial Society of Naturalists, Moscow.....	1884
NAMIYE, M., Tokio.....	1886
NICHOLSON, FRANCIS, The Knoll, Windermere, England.....	1884
NORTH, ALFRED J., Australian Museum, Sydney, New South Wales..	1902
OATES, EUGENE WILLIAM, 1 Carlton Gardens, Ealing, London, W...	1884
PALMÉN, DR. J. A., Helsingfors, Finland.....	1883
PYCRAFT, W. P., British Museum (Nat. Hist.), Cromwell Road, Lon- don, S. W.....	1902
RAMSEY, E. P., Sydney, New South Wales.....	1884
RINGER, FREDERIC, Nagasaki.....	1888
ROTHSCHILD, HON. WALTER L., Zoölogical Museum, Tring, England.	1898
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THAYER, JOHN ELIOT, Lancaster, Mass.	1905
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BOWDITCH, HAROLD, Pond St., Jamaica Plain, Mass.	1900
BOWLES, JOHN HOOPER, 401 S. G. St., Tacoma, Wash.	1891
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BRADFORD, Mrs. J. L., Morris Building, New Orleans, La.	1897
BRADFORD, MOSES B. L., Concord Public Library, Concord, Mass.	1889
BRADLEE, THOMAS STEVENSON, Somerset Club, Boston, Mass.	1902
BRANDRETH, COURTENAY, Cliff Cottage, Ossining, N. Y.	1905
BRANDRETH, FRANKLIN, Cliff Cottage, Ossining, N. Y.	1889
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BRIGHT, Miss ANNA L., Green Hill Farm, Overbrook, Pa.	1903
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BROCK, Dr. HENRY HERBERT, 687 Congress St., Portland, Me.	1894
BROCKWAY, ARTHUR WILLIAM, Hadlyme, Conn.	1906
BROOKS, ALLAN, Okanagan Landing, B. C.	1902
BROOKS, Rev. EARLE AMOS, Weston, W. Va.	1892
BROWN, D. E., 949 24th Ave., Seattle, Wash.	1906
BROWN, EDWARD J., Lemon City, Florida.	1891
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BROWN, LEWIS BOYER, City Engineer's Dept., City Hall, Toronto, Ontario.	1904
BROWN, STEWARDSON, 20 E. Penn St., Germantown, Philadelphia, Pa.	1895
BROWNSON, W. H., Superintendent of Schools, Portland, Me.	1903
BRYANT, OWEN, Cohasset, Mass.	1903
BUCHANAN, C. S., New Haven, Mo.	1906
BUCK, HENRY ROBINSON, 18 Girard Ave., Hartford, Conn.	1897
BUMPUS, Dr. HERMON C., Am. Mus. Natural History, New York City.	1901
BURGESS, JOHN KINGSBURY, Chestnut St., Dedham, Mass.	1898
BURKE, WM. BARDWELL, 130 Spring St., Rochester, N. Y.	1901
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BURTCH, VERDI, Branchport, N. Y.	1903
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BUTLER, Miss CHARLOTTE W., 75 Cabot St., Beverly, Mass.	1904
BUTLER, ERNEST A., 3417 N. 19th St., Philadelphia, Pa.	1906
BUXBAUM, Mrs. CLARA E., St. Joseph, Mich.	1895
CABOT, LOUIS, Brookline, Mass.	1904
CADY, Mrs. JOHN H., 127 Power St., Providence, R. I.	1905
CALLENDER, JAMES PHILLIPS, 603 Springfield Ave., Summit, N. J.	1903
CAMERON, E. S., Fallon, Montana.	1903
CAMPBELL, Mrs. ROBERT, 280 Wildwood Ave., Jackson, Mich.	1905
CARLETON, CYRUS, 69 Vinton St., Providence, R. I.	1903

CARPENTER, REV. CHARLES KNAPP, 183 Fox St., Aurora, Ill.....	1894
CARROLL, JAMES M., 714 Speight St., Waco, Tex.....	1905
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CLARK, JOSIAH H., 238 Broadway, Paterson, N. J.....	1895
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CLARKE, DR. CHARLES K., Toronto Asylum, Toronto, Ont.....	1902
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DYCHE, Prof. L. L., Lawrence, Kansas	1886
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EASTGATE, ALFRED, Harrisburg, Nelson Co., N. D.	1906
EASTMAN, HARRY D., Framingham, Mass.	1891
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FINLEY, WILLIAM L., 264 Madison St., Portland, Ore.	1904
FISHER, Miss ELIZABETH WILSON, 1502 Pine St., Philadelphia, Pa.	1896
FISHER, WILLIAM HUBBELL, 13 Wiggins Block, Cincinnati, Ohio.	1883
FLANAGAN, JOHN H., 392 Benefit St., Providence, R. I.	1898
FLETCHER, Mrs. MARY E., Proctorsville, Vt.	1898
FOOTE, Miss F. HUBERTA, 90 Locust Hill Ave., Yonkers, N. Y.	1897
FORBES, HENRY S., Milton, Mass.	1904
FORDYCE, GEO. L., 40 Lincoln Ave., Youngstown, Ohio.	1901
FORSYTH, DOUGLAS, Box 1808, New Orleans, La.	1906
FOWLER, FREDERICK HALL, 221 Kingsley Ave., Palo Alto, Cal.	1892
FOWLER, HENRY W., Acad. Nat. Sciences, Philadelphia, Pa.	1898
FOX, Dr. WILLIAM H., 1826 Jefferson Place, Washington, D. C.	1883

FRASER, DONALD, Johnstown, N. Y.....	1902
FREEMAN, MISS HARRIET E., 37 Union Park, Boston, Mass.....	1903
FRENCH, CHARLES H., Canton, Mass.....	1904
FULLER, CHARLES ANTHONY, Summit Road, Brookline, Mass.....	1894
FULLER, T. OTIS, Needham, Mass.....	1904
FUTCHER, DR. THOMAS B., 3 W. Franklin St., Baltimore, Md.....	1906
GALLUP, ASA H., 65 James St., Ottawa, Ontario.....	1905
GAMMELL, IVES, 170 Hope St., Providence, R. I.....	1903
GANO, MISS LAURA, Earham Place, Richmond, Ind.....	1903
GARDINER, CHARLES BARNES, 5 Minard Place, Norwalk, Ohio.....	1903
GARRICK, JAMES P., Jr., Weston, Richmond Co., S. C.....	1906
GATES, GEORGE B., Madison, S. D.....	1904
GATH, JOHN, Box 236 Torrington, Conn.....	1901
GIBSON, LANGDON, 18 Washington Ave., Schenectady, N. Y.....	1904
GIFFORD, EDWARD WINSLOW, 3256 Briggs Ave., Alameda, Cal.....	1904
GLEASON, REV. HERBERT W., 83 Pinckney St., Boston, Mass.....	1894
GODDARD, F. N., 33 E. 50th St., New York City.....	1901
GOODALE, DR. JOSEPH LINCOLN, 258 Beacon St., Boston, Mass.....	1885
GOODRICH, JULIET T., 10 Astor St., Chicago, Ill.....	1904
GOODWIN, MISS AMELIA M., 10 Follen St., Cambridge, Mass.....	1904
GOSS, MRS. ALETTA W., 5475 Ridgewood Court, Chicago, Ill.....	1902
GOULD, JOSEPH E., 5 Clifton St., Norfolk, Va.....	1889
GRANGER, MISS HELEN, Pierce Hall, Cambridge, Mass.....	1904
GRANGER, WALTER W., Am. Mus. Nat. Hist., New York City.....	1891
GRAVES, MRS. CHARLES B., 66 Franklin St., New London, Conn.....	1905
GREENE, EARLE R., 470 Jackson St., Atlanta, Ga.....	1905
GREENOUGH, MRS. AMELIA P., 377 Beacon St., Boston, Mass.....	1904
GREENOUGH, HENRY VOSE, 45 Carlton St., Brookline, Mass.....	1901
GREGORY, STEPHEN S., Jr., 89 Astor St., Chicago, Ill.....	1906
GRIFFING, MOSES BOWDITCH, Shelter Island Heights, N. Y.....	1897
HADLEY, ALDEN H., Monrovia, Ind.....	1906
HALES, HENRY, Ridgewood, N. J.....	1890
HALL, H. PORTER, Leominster, Mass.....	1904
HAMFELDT, A., The Ware Times, Ware, Ia.....	1892
HAMILTON, CAMPBELL T., 216 77th St., Brooklyn, N. Y.....	1905
HAMLIN, GEORGE L., R. F. D. 9, Fairfield, Conn.....	1893
HANKINSON, THOMAS LEROY, Charleston, Ill.....	1897
HANN, HERBERT H., 700 Springfield Ave., Summit, N. J.....	1903
HARDON, MRS. HENRY W., 315 West 71st St., New York City.....	1905
HARDY, JOHN H., Jr., 24 Irving St., Arlington, Mass.....	1905
HARRIMAN, MISS MARY, 1 E. 55th St., New York City.....	1899
HARTLEY, INNESS, 314 W. 86th St., New York City.....	1901
HARVEY, J. DOWNEY, 2555 Webster St., San Francisco, Cal.....	1906
HARVEY, MISS RUTH SAWYER, Bond Hill, Cincinnati, Ohio.....	1902
HASKELL, MISS HELEN P., 1207 Henry St., Alton, Ill.....	1905
HATHAWAY, HARRY S., Box 498, Providence, R. I.....	1897

HAVEMEYER, H. O., Jr., Mahwah, N. J.....	1893
HAZARD, Hon. R. G., Peace Dale, R. I.....	1885
HEAD, Miss ANNA, 2538 Channing Way, Berkeley, Cal.....	1903
HEALEY, Rev. SULLIVAN SCOTT, Pullman, Wash.....	1906
HEERMANCE, EDGAR THORNTON, 364 Palisade Ave., Yonkers, N. Y.....	1903
HELME, ARTHUR H., Miller Place, N. Y.....	1888
HEMPHILL, ASHTON E., Holyoke, Mass.....	1905
HENCHEY, MICHAEL F., Box 252 Unionville, Conn.....	1906
HENDERSON, Judge JUNIUS, Boulder, Colo.....	1903
HENDRICKSON, W. F., 276 Hillside Ave., Jamaica, N. Y.....	1885
HENNING, CARL FRITZ, 922 8th St., Boone, Ia.....	1906
HENNINGER, Rev. WALTHER F., 206 Jefferson St., Tiffin, Ohio.....	1898
HERRICK, HAROLD, 46 Cedar St., New York City.....	1905
HIGBEE, HARRY G., 13 Austin St., Hyde Park, Mass.....	1900
HILL, A. C., 400 Pleasant St., Belmont, Mass.....	1905
HILL, JAMES HAYNES, Box 485, New London, Conn.....	1897
HILL, Mrs. THOMAS R., 4629 Baltimore Ave., Philadelphia, Pa.....	1903
HINDSHAW, HENRY HAVELOCK, D. & H. R. R. system, Albany, N. Y.....	1897
HINE, Prof. JAMES STEWART, Ohio State Univ., Columbus, Ohio.....	1899
HINE, Mrs. JANE L., Sedan, Ind.....	1890
HINTON, Miss SUSAN McV., 41 W. 32d St., New York City.....	1900
HITCHCOCK, FRANK H., 658 Chestnut St., Waban, Mass.....	1891
HIX, GEORGE E., 630 Columbus Ave., New York City.....	1904
HODGE, Prof. CLIFTON FREMONT, Clark Univ., Worcester, Mass.....	1899
HOLBROOK, Miss ISABEL B., Rhode Island Normal School, Providence, R. I.....	1905
HOLDEN, Mrs. EMELINE R., 13 E. 79th St., New York City.....	1902
HOLDEN, Mrs. EDWIN B., 323 Riverside Drive, New York City.....	1903
HOLLAND, Dr. WILLIAM J., 5th and Bellefield Aves., Pittsburgh, Pa.....	1899
HOLLISTER, NED, Biological Survey, Dept. of Agriculture, Washington, D. C.....	1894
HOLLISTER, WARREN D., Continental Oil Co., Denver, Colo.....	1901
HOOKER, Mrs. CHARLES PARKER, 67 Chestnut St., Springfield, Mass.....	1903
HORSFALL, BRUCE, 67 Wiggins St., Princeton, N. J.....	1905
HOWARD, J. STANLEY, Box 52, Silver Lake Assembly, N. Y.....	1904
HOWARD, OZORA WILLIAM, Box 1177, Los Angeles, Cal.....	1898
HOWE, CARLTON D., Essex Junction, Vt.....	1901
HOWE, REGINALD HEBER, Jr., Middlesex School, Concord, Mass.....	1895
HOWLAND, RANDOLPH H., 130 Grove St., Montclair, N. J.....	1903
HUBBARD, Mrs. SARA A., 177 Woodruff Ave., Brooklyn, N. Y.....	1891
HUBEL, FREDERICK C., Clarkston, Mich.....	1903
HUNN, JOHN T. SHARPLESS, 1218 Prospect Ave., Plainfield, N. J.....	1895
HUNT, CHRESWELL J., 225 N. 53rd St., West Philadelphia, Pa.....	1902
HUNTER, W. D., Box 208, Dallas, Texas.....	1899
INGALLS, CHARLES E., East Templeton, Mass.....	1885

INGERSOLL, ALBERT M., 818 5th St., San Diego, Cal.....	1885
IRVING, JOHN, 550 Park Av., New York City.....	1894
ISHAM, C. B., 30 E. 63d St., New York City.....	1891
JACKSON, THOMAS H., 343 E. Biddle St., West Chester, Pa.....	1888
JAGER, H. J., 222 State Ave., Owatonna, Minn.....	1904
JANNEY, NATHANIEL E., 112 Drexel Bldg., Philadelphia, Pa.....	1899
JENKINS, HUBERT OLIVER, Stanford University, Cal.....	1902
JENNEY, CHARLES F., 35 Congress St., Boston, Mass.....	1905
JOHNSON, EVERETT EDWIN, R. F. D. 1, Box 46, Hebron, Me.....	1896
JOHNSON, FRANK EDGAR, 16 Amackassin Terrace, Yonkers, N. Y....	1888
JOHNSON, JAMES HOWARD, Bradford, N. H.....	1894
JOHNSON, WALTER ADAMS, 18 Gramercy Park, New York City.....	1898
JOHNSON, WILLIAM S., Boonville, N. Y.....	1893
JONAS, MISS ANNA C., 383 Erskine St., Detroit, Mich.....	1906
JORDAN, A. H. B., Everett, Wash.....	1888
JUDD, ELMER T., Cando, N. D.....	1895
JUDD, H. CORNELIUS, Bethel, Conn.....	1906
JUDD, ROBERT S., Bethel, Conn.....	1906
JUDSON, CLAY, 258 Knapp St., Milwaukee, Wis.....	1906
KEYS, JAMES EDWARD, 328 St. George St., London, Ontario.....	1899
KEIM, THOMAS DANIEL, 405 Radcliffe St., Bristol, Pa.....	1902
KELKER, WILLIAM A., Box 114, Harrisburg, Pa.....	1896
KELLOGG, Prof. VERNON L., Stanford University, Cal.....	1888
KENDALL, MISS BLANCHE, 20 Dudley St., Brookline, Mass.....	1904
KENNARD, FREDERIC HEDGE, Dudley St., Newton Centre, Mass....	1892
KENT, GEORGE H., Suffolk, Miss.....	1905
KERMODE, FRANCIS, Curator Provincial Museum, Victoria, B. C....	1904
KEYES, Prof. CHAS. R., Mt. Vernon, Ia.....	1904
KIDDER, NATHANIEL T., Milton, Mass.....	1906
KILGORE, WILLIAM, Jr., 2634 Fremont Ave. N, Minneapolis, Minn..	1906
KING, LE ROY, 20 E. 84th St., New York City.....	1901
KIRKHAM, Mrs. JAMES W., 275 Maple St., Springfield, Mass.....	1904
KIRKWOOD, FRANK C., Twiggstown, Alleghaney Co., Md.....	1892
KLUGH, A. B., 7 Wellington St., Kingston, Ont.....	1904
KNAEBEL, ERNEST, 1040 Josephine St., Denver, Colo.....	1906
KNAPP, Mrs. HENRY A., 301 Quincy Ave., Scranton, Pa.....	1905
KNIGHT, ORA WILLIS, 84 Forest Ave., Bangor, Me.....	1893
KNOLHOFF, FERDINAND WILLIAM, 28 Winans St., East Orange, N. J.	1897
KOPMAN, HENRY HAZLITT, Ellisville, Miss.....	1899
KUTCHIN, Dr. VICTOR, Dartford, Wis.....	1905
LACEY, HOWARD GEORGE, Kerrville, Texas.....	1899
LANTZ, Prof. DAVID ERNEST, Dept. of Agriculture, Washington, D. C.	1885
LARRABEE, AUSTIN P., 232 W. First North St., Salt Lake City, Utah.	1902
LATIMER, MISS CAROLINE P., 19 Pierrepont St., Brooklyn, N. Y....	1898
LAURENT, PHILIP, 31 E. Mt. Airy Ave., Mt. Airy, Philadelphia, Pa...	1902
LECHASSEUR, A., Trois-Pistoles, Quebec.....	1905

LEE, Prof. LESLIE ALEXANDER, 3 Bath St., Brunswick, Me	1903
LEVERING, THOMAS HENRY, Grant Road, Washington, D. C.....	1898
LINCOLN, ALBERT L., Walnut Place, Brookline, Mass.....	1904
LINTON, Miss MARY J., 163 East St., Pittsfield, Mass.....	1903
LOOMIS, JOHN A., Mereta, Texas.....	1887
LORD, Rev. WILLIAM R., Rockland, Mass.....	1901
LORING, J. ALDEN, Owego, New York.....	1889
LOWE, WILLOUGHBY P., Okehampton, Devon, England.....	1893
LUM, EDWARD H., Chatham, N. J.....	1904
MACDOUGALL, GEORGE R., 131 W. 73rd St., New York City.....	1890
MACLAY, MARK W., Jr., 13 W. 31st St., New York City.....	1905
MADDOCK, Miss EMELINE, The Belgravia, Philadelphia, Pa.....	1897
MAHER, J. E., Windsor Locks, Conn.....	1902
MAITLAND, ALEXANDER, 45 Broadway, N. Y. City.....	1906
MAITLAND, ROBERT L., 45 Broadway, New York City.....	1889
MARCH, Prof. JOHN LEWIS, Union College, Schenectady, N. Y.....	1903
MARLEY, JOHN S., 4123 Oak St., Kansas City, Mo.....	1906
MARRS, MRS. KINGSMILL, Saxonville, Mass.....	1903
MARSDEN, H. W., Witch Creek, Cal.....	1904
MARSH, DANIEL J., Five cent Savings Bank, Springfield, Mass.....	1894
MARTIN, Miss MARIA ROSS, Box 365, New Brunswick, N. J.....	1902
MAXON, WILLIAM R., U. S. Nat. Mus., Washington, D. C.....	1906
McATEE, WALDO LEE, Dept. of Agriculture, Washington, D. C.....	1903
McCAIN, J. I., Due West, S. C.....	1906
McCLINTOCK, NORMAN, 504 Amberson Ave., Pittsburgh, Pa.....	1900
McCONNELL, HARRY B., Box 77, Cadiz, O.....	1904
McCOOK, PHILIP JAMES, 15 William St., New York City.....	1895
McELHONE, Miss NELL K., 377 West End Ave., New York City.....	1905
McEWEN, DANIEL C., 160 Stirling Pl., Brooklyn, N. Y.....	1901
McHATTON, Dr. HENRY, Macon, Ga.....	1898
McILHENNY, EDWARD AVERY, Avery Island, La.....	1894
McKECHNIE, FREDERICK BRIDGHAM, Ponkapog, Mass.....	1900
McLAIN, ROBERT BAIRD, Market and 12th Sts., Wheeling, W. Va.....	1893
McMILLAN, MRS. GILBERT, Gorham, N. H.....	1902
McNEIL, Miss EMILY, Cromwell Hall, Cromwell, Conn.....	1905
McNULTY, HENRY A., 281 Fourth Ave., N. Y. City.....	1900
MEAD, Mrs. E. M., 2465 Broadway, New York City.....	1904
MEEKER, JESSE C. A., Box 163, Danbury, Conn.....	1899
MERRIAM, HENRY F., 94 New England Ave., Summit, N. J.....	1905
MERRILL, HARRY, Bangor, Maine.....	1883
MERSHON, W. B., Saginaw, Mich.....	1905
MILLER, JAMES HENRY, Lowville, N. Y.....	1904
MILLS, HARRY C., Box 218, Unionville, Conn.....	1897
MILLS, Prof. WILLIAM C., Ohio State Univ., Columbus, O.....	1900
MITCHELL, Dr. WALTON I., 321 Barnes Bldg., Wichita, Kans.....	1893

MONTGOMERY, THOMAS H., Jr., Univ. of Texas, Austin, Texas.....	1899
MOORE, CLEMENT, 107 Euclid Ave., Hackensack, N. J.....	1906
MOORE, Miss ELIZ. PUTNAM, 70 West 11th St., New York City.....	1905
MOORE, ROBERT THOMAS, W. Main St., Haddonfield, N. J.....	1898
MORCOM, G. FREAN, 1815 N. Raymond Ave., Pasadena, Cal.....	1886
MORGAN, ALBERT, Hartford Fire Ins. Co., Hartford, Conn.....	1903
MORGAN, T. A., 316 High St., Morgantown, W. Va.....	1906
MORTON, Dr. HOWARD McILVAIN, 400 Andrus Bldg., Minneapolis, Minn.....	1900
MOSHER, FRANKLIN H., Wakefield, Mass.....	1905
MOSLE, Mrs. GEORGE R., Gladstone, Somerset Co., N. J.....	1904
MUMMERY, EDWARD G., 24 E. Atwater St., Detroit, Mich.....	1902
MURPHEY, Dr. EUGENE E., 444 Telfair St., Augusta, Ga.....	1903
MURPHY, ROBERT C., Amer. Mus. Nat. Hist., N. Y. City.....	1905
MYERS, Mrs. HARRIET W., 306 Ave. 66, Los Angeles, Cal.....	1906
MYERS, Miss LUCY F., "Brookside," Poughkeepsie, N. Y.....	1898
NASH, CHAUNCEY C., 245 Newbury St., Boston, Mass.....	1906
NASH, C. W., 94 Lee Ave., Toronto, Ont.....	1906
NASH, HERMAN W., Box 264, Pueblo, Colo.....	1892
NEFF, CHARLES H., Portland, Conn.....	1906
NELSON, JAMES ALLEN, 210 Mitchell St., Ithaca, N. Y.....	1898
NEWMAN, Rev. STEPHEN M., 1818 M. St., N. W., Washington, D. C.....	1898
NICHOLS, JOHN M., 46 Spruce St., Portland, Me.....	1890
NICHOLS, JOHN TREADWELL, 42 W. 11th St., New York City.....	1901
NOLTE, Rev. FELIX, St. Benedict's College, Atchison, Kan.....	1903
NORRIS, J. PARKER, Jr., 2122 Pine St., Philadelphia, Pa.....	1904
NORRIS, ROY C., 725 N. 10th St., Richmond, Ind.....	1904
NOWELL, JOHN ROWLAND, Box 979, Schenectady, N. Y.....	1897
NOYES, Mrs. HARRY A., Hyde Park, Vt.....	1905
O'CONNOR, HALDEMAN, 25 N. Front St., Harrisburg, Pa.....	1896
OGDEN, Dr. HENRY VINING, 141 Wisconsin St., Milwaukee, Wis.....	1897
OLDYS, HENRY, Dept. of Agriculture, Washington, D. C.....	1896
OLIVER, Dr. HENRY KEMBLE, 2 Newbury St., Boston, Mass.....	1900
OWEN, Miss JULIETTE AMELIA, 306 N. 9th St., St. Joseph, Mo.....	1897
PADDOCK, Miss ISABEL M., 14 Park St., St. Johnsbury, Vt.....	1904
PAINE, AUGUSTUS G., Jr., 126 E. 39th St., New York City.....	1886
PALMER, SAMUEL COPELAND, Swarthmore, Pa.....	1899
PARKER, Hon. HERBERT, S. Lancaster, Mass.....	1904
PATTEN, Mrs. JOHN D., 2212 R St., Washington, D. C.....	1900
PEABODY, Rev. P. B., Blue Rapids, Kans.....	1903
PEAVEY, ROBERT W., 791 Coney Island Ave., Brooklyn, N. Y.....	1903
PECK, CLARK J., 6728 Leeds St., W. Philadelphia, Pa.....	1904
PECK, HENRY O., 62 Pomeroy Ave., Pittsfield, Mass.....	1904
PERRY, Dr. ELTON, 610 Baylor St., Austin, Tex.....	1902
PERRY, GEORGE P., Sterling, Ill.....	1905
PETERS, JAMES LEE, Walnut Ave., Jamaica Plain, Mass.....	1904

PETERSON, CYRUS A., 8 Shaw Place, St. Louis, Mo.....	1904
PETTIS, MISS GRACE L., Museum Nat. Hist., Springfield, Mass.....	1903
PHELPS, MRS. J. W., Box 36, Northfield, Mass.....	1899
PHILLIPS, ALEXANDER H., Princeton, N. J.....	1891
PHILLIPS, JOHN CHARLES, 299 Berkeley St., Boston, Mass.....	1904
PHILLIPS, SHERMAN E., Canterbury, N. H.....	1904
PIERCE, A. K., Renovo, Pa.....	1891
PIPER, STANLEY E., Biological Survey, Dept. Agriculture, Wash- ton, D. C.....	1906
PITCAIRN, WILLIAM G., 3330 Perrysville Ave., Allegheny, Pa.....	1906
POE, MISS MARGARETTA, 1500 Park Ave., Baltimore, Md.....	1899
POLLOCK, ADELAIDE L., Queen Anne School, Seattle, Wash.....	1906
POMEROY, HARRY KIRKLAND, Box 575, Kalamazoo, Mich.....	1894
POOLE, ALFRED D., 401 W. 7th St., Wilmington, Delaware.....	1901
POOLE, MISS GRACE L., 22 School St., Rockland, Mass.....	1906
PORTER, LOUIS H., Stamford, Conn.....	1893
PRAEGER, WILLIAM E., 421 Douglas Ave., Kalamazoo, Mich.....	1892
PRICE, JOHN HENRY, Crown W Ranch, Knowlton, Mont.....	1906
PROCTER, JAMES N., R. F. D. 2, Ventura, Cal.....	1904
PURDY, JAMES B., Plymouth, Mich.....	1893
RADCLIFFE, MRS. WALLACE, 1200 K St., N. W., Washington, D. C.....	1905
RALPH, JAMES R., 205 S. 7th St., Minneapolis, Minn.....	1906
RANN, MRS. MARY L., Manchester, Iowa.....	1893
RAUB, DR. M. W., 340 W. King St., Lancaster, Pa.....	1890
RAWSON, CALVIN LUTHER, Box 33, Norwich, Conn.....	1885
READ, ALBERT M., 1140 15th St. N. W., Washington, D. C.....	1895
REAGH, DR. ARTHUR LINCOLN, 39 Maple St., West Roxbury, Mass.....	1896
REDFIELD, MISS ELISA WHITNEY, 29 Everett St., Cambridge, Mass.....	1897
REDINGTON, ALFRED POETT, Box 66, Santa Barbara, Cal.....	1890
REED, CHESTER A., 75 Thomas St., Worcester, Mass.....	1904
REED, MISS EMILY E., 12 Louisburg Sq., Boston, Mass.....	1904
REED, HUGH DANIEL, 804 E. Seneca St., Ithaca, N. Y.....	1900
REED, MRS. WILLIAM HOWELL, Belmont, Mass.....	1904
REHN, JAMES A. G., Acad. Nat. Sciences, Philadelphia, Pa.....	1901
REMICK, J. A., Jr., 300 Marlboro St., Boston, Mass.....	1905
RHOADS, CHARLES J., Bryn Mawr, Pa.....	1895
RICHARDS, MISS HARRIET E., 36 Longwood Ave., Brookline, Mass.....	1900
RICHARDSON, C. H., Jr., 435 S. El Molino Ave., Pasadena, Cal.....	1903
RICHARDSON, MISS HARRIET, 1864 Wyoming Ave., Washington, D.C.....	1905
RICHARDSON, JOHN KENDALL, Wellesley Hills, Mass.....	1896
RIDGWAY, JOHN L., Chevy Chase, Md.....	1890
RIKER, CLARENCE B., Maplewood, N. J.....	1885
ROBERTS, JOHN T., JR., 350 Main St., Buffalo, N. Y.....	1906
ROBERTS, WILLIAM ELY, George School, Bucks Co., Pa.....	1902
ROBINSON, ANTHONY W., 409 Chestnut St., Philadelphia, Pa.....	1903
RODDY, PROF. H. JUSTIN, State Normal School, Millersville, Pa.....	1891

ROE, CHARLES M., Kenilworth, Ill.....	1906
ROGERS, CHARLES H., 109 Patton Hall, Princeton, N. J.....	1904
ROOSEVELT, FRANKLIN DELANO, Hyde Park, N. Y.....	1896
ROSS, GEORGE H., 23 West St., Rutland, Vt.....	1904
ROWLEY JOHN, 505 Everett Ave., Palo Alto, Cal.....	1889
SABINE, GEORGE K., 30 Irving St., Brookline, Mass.....	1903
SAGE, HENRY M., Menands Road, Albany, N. Y.....	1885
SAMPSON, WALTER BEHRNARD, 36 S. California St., Stockton, Cal....	1897
SANDS, AUSTIN LEDYARD, Greenough Place, Newport, R. I.....	1902
SANFORD, GEORGE ALDEN, 215 W. 23rd St., N. Y. City.....	1906
SANFORD, HARRISON, 65 W. 50th St., New York City.....	1905
SANFORD, DR. LEONARD C., 216 Crown St., New Haven, Conn.....	1902
SASS, HERBERT RAVENEL, 23 Legare St., Charleston, S. C.....	1906
SAVAGE, WALTER GILES, Monteer, Mo.....	1898
SCHMUCKER, DR. S. C., 610 S. High St., West Chester, Pa.....	1903
SCHUMACHER, BOWEN W., 107 Dearborn St., Chicago, Ill.....	1906
SCHWARZ, FRANK, 1520 Lafayette Ave., St. Louis, Mo.....	1904
SEABURY, JOSEPH S., Wellesley Hills, Mass.....	1906
SEISS, COVINGTON FEW, 1338 Spring Garden St., Philadelphia, Pa....	1898
SEVERSON, HENRY P., Winneconne, Wis.....	1902
SHATTUCK, EDWIN HAROLD, Granby, Conn.....	1898
SHAW, HOLTON A., 610 4th Ave., Grand Forks, N. Dakota.....	1898
SHEARER, AMON R., Mont Belvieu, Tex.....	1905
SHELDON, CHARLES, 515 Madison Ave., New York City.....	1905
SHOEMAKER, FRANK H., Care of Gen. Auditor U. P. R. R. Co., Omaha, Neb.....	1895
SHROSBREE, GEORGE, Public Museum, Milwaukee, Wis.....	1899
SHUMWAY, GEORGE, Galesburg, Ill.....	1906
SILLIMAN, HARPER, 562 5th Ave., New York City.....	1902
SMITH, BYRON L., 2140 Prairie Ave., Chicago, Ill.....	1906
SMITH, DR. CLARA, Utica State Hospital, Utica, N. Y.....	1906
SMITH, REV. FRANCIS CURTIS, Boonville, N. Y.....	1903
SMITH, G. WASHBOURNE, 97 Nassau St., N. Y. City.....	1906
SMITH, HORACE G., State House, Denver, Colo.....	1888
SMITH, DR. HUGH M., 1209 M St. N. W., Washington, D. C.....	1886
SMITH, LOUIS IRVIN, JR., 3809 Chestnut St., Philadelphia, Pa.....	1901
SMITH, PHILO W., JR., Box 285, Eureka Springs, Ark.....	1903
SMITHSON, AUBREY F., Warrensburg, Mo.....	1906
SMYTH, PROF. ELLISON A., JR., Polytechnic Inst., Blacksburg, Va....	1892
SNOW, PROF. FRANCIS H., Univ. of Kansas, Lawrence, Kan.....	1903
SNYDER, WILL EDWIN, 109 E. Mackie St., Beaver Dam, Wis.....	1895
SPAULDING, FRED B., Lancaster, N. H.....	1894
SPINNEY, HERBERT L., Seguin Light Station, Popham Beach, Me....	1900
STANTON, PROF. J. Y., 410 Main St., Lewiston, Me.....	1883
STARK, GILBERT M., 1027 N. Michigan Ave., Saginaw, Mich.....	1906
STEBBINS, MISS FANNIE A., 480 Union St., Springfield, Mass.....	1903

STEELE, JOHN H., 4010 Spruce St., West Philadelphia, Pa.....	1906
STEPHENSON, MRS. LOUISE McGOWN, 806 College St., Helena, Ark....	1894
STEVENS, CAROLINE M., 52 Bowdoin St., Portland, Me.....	1906
STIGALL, BENNETT M., Manual Training High School, Kansas City, Mo.....	1906
STONE, CLARENCE F., Branchport, N. Y.....	1903
STONE, DWIGHT D., R. F. D. 3, Oswego, N. Y.....	1891
STRATTON-PORTER, MRS. GENE, Limberlost Cabin, Geneva, Ind.....	1906
STURTEVANT, EDWARD, St. George's School, Newport, R. I.....	1896
STYER, MRS. KATHARINE R., Concordville, Pa.....	1903
SURFACE, Prof. HARVEY ADAM, State Zoölogist, Harrisburg, Pa.....	1897
SWAIM, LORING T., 190 Brattle St., Cambridge, Mass.....	1905
SWAIN, JOHN MERTON, Farmington, Me.....	1899
SWALES, BRADSHAW HALL, Grosse Isle, Mich.....	1902
SWARTH, HARRY S., 356 Belden Ave., Chicago, Ill.....	1900
SWENK, MYRON H., 1821 O St., Lincoln, Neb.....	1904
SWEZEY, GEORGE, 61 Polk St., Newark, N. J.....	1901
TAVERNER, PERCY A., 55 Elmhurst, Highland Park, Mich.....	1902
TAYLOR, ALEXANDER O'DRISCOLL, 11 Frances St., Newport, R. I....	1888
TEST, CHARLES DARWIN, Golden, Colo.....	1906
TEST, Dr. FREDERICK CLEVELAND, 4318 Grand Boulevard Chicago, Ill.....	1892
THOMAS, Miss EMILY HINDS, The Aldine Hotel, Chestnut St., Phila- delphia, Pa.....	1901
THOMPSON, Miss CAROLINE BURLING., 195 Blossom St., Wellesley, Mass.....	1900
THOMPSON, Dr. Millett T., Clark University, Worcester, Mass.....	1904
THOMPSON, ROY, Cando, N. D.....	1905
TOPPAN, GEORGE L., 725 11th St., N. W., Washington, D. C.....	1886
TOWNSEND, WILMOT, 272 75th St., Brooklyn, N. Y.....	1894
TREGANZA, A. O., 62 Hooper Bldg., Salt Lake City, Utah.....	1906
TROTTER, WILLIAM HENRY, 36 N. Front St., Philadelphia, Pa.....	1899
TUDBURY, WARREN C., 47 W. 126th St., New York City.....	1903
TUFTS, LE ROY MELVILLE, "Thrushwood," Farmington, Me.....	1903
TURNER, HOWARD M., 28 Grays Hall, Cambridge, Mass.....	1903
TUTTLE, Dr. CARL, Berlin Heights, Ohio.....	1890
TWEEDY, EDGAR, 336 Main St., Danbury, Conn.....	1902
UNDERWOOD, WILLIAM LYMAN, Mass. Inst. Technology, Boston, Mass.....	1900
VALENTINE, Miss ANNA J., Bellefonte, Pa.....	1905
VAN CORTLANDT, Miss ANNE S., Croton-on-Hudson, N. Y.....	1885
VAN NAME, WILLARD GIBBS, 121 High St., New Haven, Conn.....	1900
VAN NORDEN, WARNER MONTAGNIE, Jay Mansion, Harrison, N. Y....	1899
VAN SANT, Miss ELIZABETH, 2960 Dewey Ave., Omaha, Neb.....	1896
VARICK, MRS. WILLIAM REMSEN, 1015 Chestnut St., Manchester, N. H.	1900
VETTER, Dr. CHARLES, 152 Second St., New York City.....	1898

VISHER, STEPHEN S., Forestburg, S. Dakota.....	1904
VOLKMAN, JULIUS T., Webster Grove, Mo.....	1906
WADSWORTH, CLARENCE S., Middletown, Conn.....	1906
WALES, EDWARD H., Hyde Park, N. Y.....	1896
WALKER, DR. R. L., 355 Main Ave., Carnegie, Pa.....	1888
WALLINGSFORD, LEO, 216 E. Crippen St., Cadillac, Mich.....	1904
WALTER, HERBERT E., Dr., 53 Arlington Ave., Providence, R. I....	1901
WALTERS, FRANK, South Sandisfield, Mass.....	1902
WARD, HENRY L., 882 Hackett Ave., Milwaukee, Wis.....	1906
WARREN, DR. B. H., Box 245, West Chester, Pa.....	1885
WARREN, EDWARD ROYAL, 20 W. Caramillo St., Colorado Springs, Colo	1902
WATSON, MISS SARAH R., 5128 Wayne St., Germantown, Philadelphia, Pa	1900
WEIR, J. ALDEN, Branchville, Conn.....	1899
WELLS, FRANK S., 916 Grant Ave., Plainfield, N. J.....	1902
WENTWORTH, IRVING H., Matehuala, E. de S. L. P., Mexico.....	1900
WEST, LEWIS H., Roslyn, N. Y.....	1887
WESTFELDT, GUSTAF REINHOLD, Box 601, New Orleans, La.....	1902
WETMORE, MRS. EDMUND, 343 Lexington Ave., New York City.....	1902
WHEELER, EDMUND JACOB, 177 Pequot Ave., New London, Conn.....	1898
WHEELER, JOHN B., East Templeton, Mass.....	1897
WHELOCK, MRS. IRENE G., 1040 Hinman Ave., Evanston, Ill.....	1902
WHITCOMB, MRS. HENRY F., 721 Franklin Place, Milwaukee, Wis....	1897
WHITE, FRANCIS BEACH, 6 Phillips Place, Cambridge, Mass.....	1891
WHITE, GEORGE R., Dead Letter Office, Ottawa, Ont.....	1903
WHITE, W. A., 130 Water St., New York City.....	1902
WICKERSHAM, CORNELIUS W., Hastings 2, Cambridge, Mass.....	1902
WICKS, M. L., Jr., 620 L. A. Trust Bldg., Los Angeles, Cal.....	1890
WILBUR, ADDISON P., 60 Gibson St., Canandaigua, N. Y.....	1895
WILCOX, DR. EMMA D., 307 W. 98th St., New York City.....	1905
WILCOX, T. FERDINAND, 115 W. 75th St., New York City.....	1895
WILDE, MARK L. C., 4909 Arch St., Philadelphia, Pa.....	1893
WILLARD, BERTEL G., Box 107, Millis, Mass.....	1906
WILLIAMS, J. BICKERTON, 236 Bloor St. E., Toronto, Ontario.....	1889
WILLIAMS, RICHARD FERDINAND, Box 521, New York City.....	1902
WILLIAMS, ROBERT S., New York Botanical Gardens, Bronx Park, New York City.....	1888
WILLIAMS, ROBERT W., Jr., U. S. Dept. of Agriculture, Washington, D. C.....	1900
WILLIAMSON, E. B., Bluffton, Ind.....	1900
WILSON, SIDNEY S., German American Bank Bldg., St. Joseph, Mo....	1895
WINSLETT, MISS MARY E., Stevensville, Mont.....	1904
WISLER, J. JAY, 231 Cherry St., Columbia, Pa.....	1903
WISTER, WILLIAM ROTCH, 505 Chestnut St., Philadelphia, Pa.....	1904
WITHERBEE, MRS F. B., 106 Berkeley St., West Newton, Mass.....	1906

WOLFE, WILLIAM EDWARD, Box 7, Wray, Colo.....	1900
WOOD, J. CLAIRE, 179 17th St., Detroit, Mich.....	1902
WOOD, NELSON R., Smithsonian Institution, Washington, D. C.....	1895
WOOD, NORMAN A., 1216 S. University Ave., Ann Arbor, Mich.....	1904
WOOD, S. T., 229 Beverley St., Toronto, Ont.....	1904
WOODCOCK, ARTHUR ROY, Corvallis, Oregon.....	1901
WOODRUFF, EDWARD SEYMOUR, 14 E. 68th St., New York City.....	1899
WOODRUFF, FRANK M., Acad. Sciences, Chicago, Ill.....	1904
WOODRUFF, LEWIS B., 14 E. 68th St., New York City.....	1886
WOODWORTH, MRS. NELLY HART, 41 Bank St., St. Albans, Vt.....	1894
WORTHEN, CHARLES K., Box 103, Warsaw, Ill.....	1891
WORTHINGTON, WILLIS W., Shelter Island Heights, N. Y.....	1889
WRIGHT, ALBERT H., 325 Dryden Road, Ithaca, N. Y.....	1906
WRIGHT, HORACE WINSLOW, 82 Myrtle St., Boston, Mass.....	1902
WRIGHT, SAMUEL, Conshohocken, Pa.....	1895
ZAPPEY, WALTER R., 19 Norfolk St., Roslindale, Mass.....	1905
ZERRAHN, CARL OTTO, Milton, Mass.....	1904

DECEASED MEMBERS.

FELLOWS.

	<i>Date of Death.</i>
BAIRD, SPENCER FULLERTON.....	Aug. 19, 1887
BENDIRE, CHARLES E.	Feb. 4, 1917
COUES, ELLIOTT.....	Dec. 25, 1899
GOSS, N. S.....	March 10, 1889
HOLDER, JOSEPH B.....	Feb. 28, 1888
JEFFRIES, JOHN AMORY.....	March 26, 1892
MCLWRAITH, THOMAS.....	Jan. 31, 1903
MERRILL, JAMES C.....	Oct. 27, 1902
SENNETT, GEORGE BURRITT.....	March 18, 1900
TRUMBULL, GURDON.....	Dec. 28, 1903
WHEATON, JOHN M.....	Jan. 28, 1887

HONORARY FELLOWS.

BLANFORD, WILLIAM T.....	June 23, 1905
BURMEISTER, HERMANN.....	May 1, 1892
CABANIS, JEAN.....	Feb. 20, 1906
GÄTKE, HEINRICH.....	Jan. 1, 1897

GUNDLACH, JUAN.....	March 14, 1896
GURNEY, JOHN HENRY.....	April 20, 1890
HARTLAUB, GUSTAV.....	Nov. 20, 1900
HUXLEY, THOMAS H.....	June 29, 1895
KRAUS, FERDINAND.....	Sept. 15, 1890
LAWRENCE, GEORGE N.....	Jan. 17, 1895
MILNE-EDWARDS, ALPHONSE.....	April 21, 1900
NEWTON, ALFRED.....	June 7, 1907
PARKER, WILLIAM KITCHEN.....	July 3, 1890
PELZELN, AUGUST VON.....	Sept. 2, 1891
SALVIN, OSBERT.....	June 1, 1898
SCHLEGEL, HERMANN.....	Jan. 17, 1884
SEEROHM, HENRY.....	Nov. 26, 1895
TACZANOWSKI, LADISLAS.....	Jan. 17, 1890

CORRESPONDING FELLOWS.

ALTUM, C. A.....	Jan. 1, 1900
ANDERSON, JOHN.....	Aug. 16, 1900
BALDAMUS, EDUARD.....	Oct. 30, 1893
BLAKISTON, THOMAS W.....	Oct. 15, 1891
BOGDANOW, MODEST N.....	March 4, 1888
BRYANT, WALTER, E.....	May 21, 1905
BULLER, WALTER LAWRY.....	July 19, 1906
COOPER, JAMES G.....	July 19, 1902
CORDEAUX, JOHN.....	Aug. 1, 1899
DAVID, ARMAND.....	Nov. 10, 1900
FATIO, VICTOR.....	March 19, 1906
HAAST, JULIUS VON.....	Aug. 15, 1887
HARGITT, EDWARD.....	March 19, 1895
HOLUB, EMIL.....	Feb. 21, 1902
HOMeyer, E. F. VON.....	May 31, 1889
LAYARD, EDGAR LEOPOLD.....	Jan. 1, 1900
LEVERKÜHN, PAUL.....	Dec. 5, 1905
LYTTLETON, THOMAS, LORD LILFORD.....	June 17, 1896
MARSCHALL, A. F.....	Oct. 11, 1887
MALMGREN, ANDERS JOHAN.....	April 12, 1897
MIDDENDORFF, ALEXANDER THEODORE VON.....	Jan. 28, 1894
MOSJISOVICS, F. G. HERMANN AUGUST.....	Aug. 27, 1897
OUSTALET, EMILE.....	Oct. 23, 1905
PHILIPPI, R. A.....	Aug. — 1904
PREJEVALSKI, N. M.....	Oct. 20, 1887
PRENTISS, D. WEBSTER.....	Nov. 19, 1899
PRYER, HARRY JAMES STOVIN.....	Feb. 17, 1888

RADDE, GUSTAV FERDINAND.....	— 1903
SCHRENCK, LEOPOLD VON.....	Jan. 20, 1894
SÉLEYS-LONGSCHAMPS, EDMOND DE.....	Dec. 11, 1900
SEVERTZOW, N.....	Feb. 8, 1885
STEVENSON, HENRY.....	Aug. 18, 1888
TRISTRAM, H. B.....	March 8, 1906
WHARTON, HENRY T.....	Sept. —, 1895
WOODHOUSE, SAMUEL W.....	Oct. 23, 1904

MEMBERS.

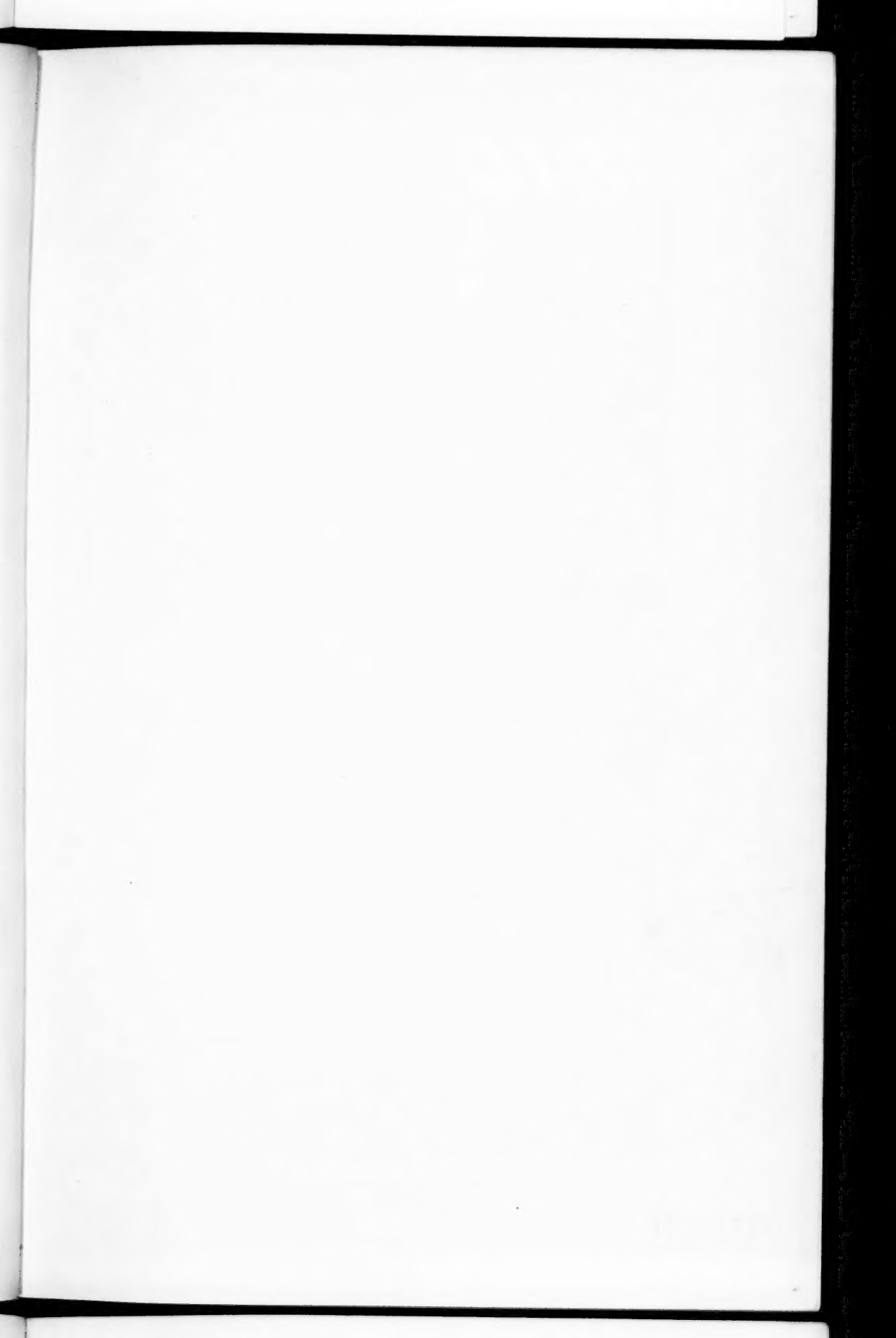
FANNIN, JOHN.....	June 20, 1904
JUDD, SYLVESTER D.....	Oct. 22, 1895
RALPH, WILLIAM LEGRANGE.....	July 8, 1907

ASSOCIATES.

ADAMS, CHARLES F.....	May 20, 1893
ALLEN, CHARLES SLOVER.....	Oct. 15, 1893
ANTES, FRANK T.....	Feb. 6, 1907
ATKINS, H. A.....	May 19, 1885
AVERY, WILLIAM CUSHMAN.....	March 11, 1894
BAILEY, CHARLES E.....	—, 1905
BARLOW, CHESTER.....	Nov. 6, 1902
BAUR, GEORGE.....	June 25, 1898
BECKHAM, CHARLES WICKLIFFE.....	June 8, 1888
BILL, CHARLES.....	April —, 1897
BIRTWELL, FRANCIS JOSEPH.....	June 29, 1901
BOARDMAN, GEORGE A.....	Jan. 11, 1901
BOLLES, FRANK.....	Jan. 10, 1894
BRACKETT, FOSTER H.....	Jan. 5, 1900
BREESE, WILLIAM L.....	Dec. 7, 1889
BRENINGER, GEORGE FRANK.....	Dec. 3, 1905
BRENNAN, CHARLES F.....	Mar. 21, 1907
BROKAW, L. W.....	Sept. 3, 1897
BROWN, JOHN CLIFFORD.....	Jan. 16, 1901
BROWNE, FRANCIS CHARLES.....	Jan. 9, 1900
BURNETT, LEONARD E.....	March 16, 1904
CAIRNS, JOHN S.....	June 10, 1895
CALL, AUBREY BRENDON.....	Nov. 20, 1901
CAMPBELL, ROBERT ARGYLL.....	April —, 1897
CANFIELD, J. B.....	Feb. 18, 1904
CARTER, EDWIN.....	— 1900
CLARK, JOHN N.....	Jan. 13, 1903

COLBURN, W. W.	Oct. 17, 1899
COLLETT, ALONSO M.	Aug. 22, 1902
CORNING, ERASTUS, JR.	April 9, 1893
COE, W. W.	April 26, 1885
DAFFIN, WM. H.	April 21, 1902
DAKIN, JOHN A.	Feb. 21, 1900
DEXTER, NEWTON	July 27, 1901
ELLIOTT, S. LOWELL	Feb. 11, 1889
FAIRBANKS, FRANKLIN	April 24, 1895
FOWLER, J. L.	July 11, 1899
GESNER, A. H.	April 30, 1895
GOSS, BENJAMIN F.	July 6, 1893
HATCH, JESSE MAURICE	May 1, 1898
HOADLEY, FREDERIC H.	Feb. 26, 1895
HOLMES, LARUE KLINGLE	May 10, 1906
HOOPES, JOSIAH	Jan. 16, 1904
HOWLAND, JOHN SNOWDON	Sept. 19, 1885
INGERSOLL, JOSEPH CARLETON	Oct. 2, 1898
JENKS, JOHN W. P.	Sept. 27, 1894
JESURUN, MORTIMER	March —, 1905
JOUY, PIERRE LOUIS	March 22, 1894
KNIGHT, WILBUR CLINTON	July 8, 1903
KNOX, JOHN C.	July 9, 1904
KNOX, JOHN COWING	June 1, 1904
KOCH, AUGUST	Feb. 15, 1907
KUMLIEN, LUDWIG	Dec. 4, 1902
KUMLIEN, THURE	Aug. 5, 1888
LAWRENCE, ROBERT HOE	April 27, 1897
LINDEN, CHARLES	Feb. 3, 1888
LLOYD, ANDREW JAMES	June 14, 1906
MABBETT, GIDEON	Aug. 15, 1900
MARBLE, CHARLES C.	Sept. 25, 1900
MARCY, OLIVER	March 19, 1899
MARIS, WILLARD LORRAINE	Dec. 11, 1895
McKINLAY, JAMES	Nov. 1, 1899
MEAD, GEORGE S.	June 19, 1901
MINOT, HENRY DAVIS	Nov. 13, 1890
MORRELL, CLARENCE HENRY	July 15, 1902
NICHOLS, HOWARD GARDNER	June 23, 1896
NIMS, LEE	March 12, 1903
NORTHROP, JOHN I.	June 26, 1891
PARK, AUSTIN F.	Sept. 22, 1893
PAULMIER, FREDERICK CLARK	March 3, 1906
POMEROY, MISS GRACE V.	May 14, 1906
RAGSDALE, GEORGE H.	March 25, 1895
READY, GEORGE H.	March 20, 1903

RICHARDSON, JENNESS.....	June 24, 1893
ROBINS, MRS. EDWARD.....	July 2, 1906
SAND, ISABELLA LOW.....	April 20, 1906
SELOUS, PERCY SHERBORN.....	April 7, 1900
SLATER, JAMES H.....	Feb. —, 1895
SLEVIN, THOMAS EDWARDS.....	Dec. 23, 1902
SMALL, EDGAR A.....	April 24, 1884
SMITH, CLARENCE ALBERT.....	May 6, 1896
SOUTHWICK, JAMES M.....	June 3, 1904
STOWE, W. H.....	March —, 1895
SWEIGER, MRS. J. L.....	March 23, 1907
THORNE, PLATTE M.....	March 16, 1897
THURBER, E. C.....	Sept. 6, 1896
VENNOR, HENRY G.....	June 8, 1884
WATERS, EDWARD STANLEY.....	Dec. 26, 1902
WILLARD, SAMUEL WELLS.....	May 24, 1887
WOOD, WILLIAM.....	Aug. 9, 1885
YOUNG, CURTIS C.....	July 30, 1902





NEST AND EGGS OF PIED-BILLED GREBE, NEWARK MARSHES, N. J., JUNE 17, 1906.
Photographed by C. G. Abbott.



NEST, EGGS, AND NEWLY HATCHED YOUNG OF FLORIDA GALLINULE, NEWARK
MARSHES, N. J., JUNE 17, 1906. Photographed by C. G. Abbott.

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No. 1.

SUMMER BIRD-LIFE OF THE NEWARK, NEW JERSEY, MARSHES.

BY CLINTON G. ABBOTT.

Plate I.

It is not the good fortune of every bird-lover to be able to visit the swamps of North Dakota, or even the more famous bird resorts nearer home; but that bird-life of scientific interest can be found within easy reach, and often in places where it would be least expected, I think the present paper will show.

There is a small group of bird-lovers, centering chiefly about the Linnæan Society of New York, who are closely confined by business in the city and whose ornithological investigations are therefore limited mostly to a small portion of the suburban district. The region has been fairly well scoured, but no experiences have been more interesting than the discoveries of the past summer in the Newark marshes, which lie within seven miles of New York City Hall, and are readily accessible within the limits even of an ordinary Saturday afternoon 'half holiday.'

These marshes, known sometimes as the Hackensack Meadows, are very extensive in their entirety, and are familiar to every one who has entered New York by train from the West. But it is only with a comparatively small area that this paper deals—a tract of not more than 100 acres. The bird-life of this spot proved to be so very interesting that there was no temptation to search further, the especially notable fact being the surprising numbers of Florida Gallinules (*Gallinula galeata*) that were found nesting here.

My first suspicion that the Florida Gallinule might be a nesting species about New York was when I heard that a bird of this species had been shot by two boys on the mill-pond at Bristol, Pa., in early September, 1899, and taken for identification to Dr. Joseph Abbott of that place. On September 7, 1902, I spent an afternoon exploring the Bristol mill-pond, but found no trace of Gallinules.

On May 28, 1904, while entering the Jersey City yards in a train of the Central Railroad of New Jersey, I had an admirable view of a Gallinule swimming in a small patch of rushes close to the trackside. I spoke to Dr. William C. Braislin of Brooklyn about the bird and on July 15, 1905, was invited to accompany him in exploring a similar situation close to the terminal of the Long Island Railroad in Long Island City, where the presence of Florida Gallinules was first discovered by Messrs. W. F. and John Hendrickson. Here we found the birds in numbers, with ample evidences of their nesting, as fully described by Dr. Braislin in 'The Auk,' Volume XXIII, 1906, page 189.

My interest in the possibilities of trackside swamps was by this time fully aroused and in my daily commutings over the main line of the Central Railroad of New Jersey I was constantly on the alert for further signs of the Gallinules. On August 4, 1905, an accident on the main line of the railroad caused the trains of that line to be dispatched by way of Newark, and a close watch of the new territory was rewarded by the sight of a number of dark colored birds swimming in a patch of open water at the point where the Newark-Elizabethport Branch crosses the Philadelphia and Reading freight tracks. I told my friends of the incident, and on Decoration Day, May 30, 1906, Messrs. H. H. Hann and J. P. Callender visited the place. The account they brought back was certainly enough to arouse the enthusiasm of the most callous ornithologist. Not only had they seen the Gallinules in numbers, and discovered both their eggs and young, but they also found three nests of the Least Bittern (*Ardetta exilis*) containing eggs, as well as one of the comical little fuzzy young birds. Furthermore they reported the presence of the American Coot (*Fulica americana*), two of which had been seen swimming in the open water.

My next available holiday, which was not till Saturday, June 16, was promptly set aside for a visit to the marshes, when Mr. Hann

was my companion. In order to make as thorough an investigation as possible, Saturday afternoon and the whole of Sunday were given up to the work, the night being spent at Newark. Mr. Callender joined us on Sunday morning.

The particular spot where the birds seemed to be most abundant, and to which our activities were confined, is best reached by walking along the railroad from Newark. In fact it is bounded on three sides by tracks, two of which are busy lines with constantly passing or shunting trains. It was certainly not a place where one would expect to look for a profusion of marsh-birds, which have a reputation for shyness and seclusion. Engineers and others about the place were found to be familiar with the birds, classing them under the general name of 'mud-hens.'

On the railroad tracks we could constantly hear the harsh cries of the Gallinules from among the reeds close by, and when we reached a spot which commands a view of open water many birds were seen swimming. With the aid of prism binoculars we plainly identified a Coot among them, and what was even more gratifying, several birds which were at once recognized as Pied-billed Grebes (*Podilymbus podiceps*), a species not observed by Messrs. Hann and Callender on their first visit. As we emerged from an old barn which we used for changing our clothes, we observed a Black-crowned Night Heron flying lazily over the swamp, with what appeared to be an eel dangling from its claws. The bird seemed to provide the last necessary suggestion of wildness to our urban hunting-ground, and helped to drive from our imaginations the presence of factories and city blocks only a few hundred yards away.

The water in the swamp was found to be about thigh deep, that is to say the wader sank that distance, but fully half the apparent depth was caused by the soft mud under the water. Occasionally, one would step into a hole up to his chest, but this was unusual, and for the most part the ground under the mud was solid and trustworthy. The area searched consisted of a broad tract of open water, containing a few islands, and bordered on the one side by the railroad track and on the other by a luxuriant growth of cat-tails into which many arms and bays extended. In addition there were among the cat-tails a number of isolated ponds unconnected with the main tract. All water, with the exception of the center of

the open tract, was covered with a solid scum of duckweed so thick that swimming birds left no path in it, as it closed immediately in their wake. The cat-tails often extended at least two feet above the wader's head, so that in a thick bed it would have been easy to lose one's bearings were it not for the tall chimney of a Bluing Factory close by — evidence in itself of the proximity of civilization to the marsh birds' haunt.

The result of our day and a half in the swamp was most gratifying. With the exception of the Coot we found the nest of every species we hoped for, and others beside. Long-billed Marsh Wrens (*Telmatodytes palustris*) were the most abundant birds found. Their nests were hanging in the cat-tails almost like some sort of fruit, and one tired of sticking his finger into them as he pushed them from his path.

Next in numbers were without doubt the Gallinules, whose strident notes, consisting chiefly of a sharp monosyllable or a laugh-like cackle, were continually in our ears. Mr. Hann and I found no less than seven inhabited nests the first afternoon and at least three times as many empty ones. The inhabited nests contained anywhere from ten eggs to one young bird. The nests themselves, which are composed entirely of dead rushes with but a shallow cup, are usually placed in an isolated tussock or else at the edge of a cat-tail bed, so that the bird when leaving may have immediate access to open water. A notable exception, however, was a nest found in a dense growth of cat-tails, at least twelve feet from open water. In the majority of cases the bed of the nest was four to six inches from the surface of the water, but several, perhaps built by birds whose first nests had been flooded, were higher. Almost every nest had a sort of sloping runway to the water's edge by which the bird probably always entered and left the nest. One nest was especially worthy of notice for its unusual height above the water, as we could barely see into it when standing on tiptoe in the mud. It was placed high on a mass of cat-tails tangled by the wind. Occasionally the tips of the rushes were drawn together to form a sort of arch over a nest, as is done by rails, but this was by no means universal.

The Gallinules' eggs are of a brownish buff ground color, speckled and blotched with reddish brown and umber. No prettier

sight could be desired than a large clutch of these handsome eggs resting on their bed of dull brown, and surrounded by the brilliant green of the cat-tails and duckweed. The measurements of a set of eight collected varied in length from 1.67 to 1.76 inches by 1.19 to 1.22 inches in width. The newly hatched Gallinule is certainly a most absurd looking little creature. The black down which covers his body, instead of being soft and warm, is coarse and hair-like. On the cheeks and throat every filament is tipped with white which only adds to the ludicrous effect. The top of the little fellow's head is nearly bald, and the skin at the base of the bill is of a bright red color, altogether a poor suggestion of the handsome shield with which the forehead of the adult bird is adorned. In more mature young birds the frontal plate is rudimentary and pale in color, and this, together with a grayish tinge to the neck and breast, render birds of the year easily distinguishable. Young Gallinules swim almost as soon as they are hatched. I was preparing to photograph a nest containing four pipped eggs and two young so recently hatched that shells were still in the nest. But before I could set up my camera one of the little fellows had scrambled out and started swimming in the direction of his mother. She would cluck to him like an old hen and he would answer with low peeping notes. Later I found him back in the nest.

Of the habits of the old Gallinules, I was able, with the increased material at hand, to corroborate and amplify my observations in the Long Island City swamps. In swimming, every stroke is accompanied by a very marked forward bob of the head, an act which I thought was perhaps an assistance to progression in the complete absence of webbed feet. Gallinules do not paddle after the manner of a duck, but seem to attempt to stride through the water. More than once the feet of both old and young birds were seen to come above the surface of the duckweed in front of the swimming bird. The tips of the wings are raised and crossed in swimming, but when the bird is standing they are folded down against the body. Like all other birds, the Gallinule becomes more courageous as its eggs near hatching. Usually the incubating bird had slipped away unseen before we even discovered her nest. But in the case of the nest containing both eggs and newly hatched young, the sitting bird allowed an approach to within about ten feet, and then

stayed close by, calling anxiously. In fact so bold did this bird show herself to be that I resolved to attempt to photograph her on her nest. It was very late in the afternoon and little time could be spent concealing the camera. But nevertheless, almost as soon as I had hidden myself in a neighboring bed of rushes, the bird showed herself, and in twenty minutes I had made an exposure. The light, however, in the meantime had become so very poor that the plate was hopelessly underexposed, though the faint image it contains is at least proof that it would be by no means an impossibility to photograph the shy Gallinule at home. The bird's actions about her nest interested me. Her note of anxiety was a strident *keck*, which she maintained ceaselessly at intervals of a few seconds, as she walked nervously about the reeds behind her nest. Each *keck* was accompanied by a spasmodic flirt of the tail; the bird also kept constantly turning and jerking her head. All her movements were most sedate and dignified and at each step the feet were raised daintily and the toes closed. But what surprised me most was that the bird continued her anxious calling even when seated upon the nest, an action which I have observed in no other bird; in the case of sparrows and the like, a cessation of the 'chipping' is often a sign that the bird is back on her nest. The Gallinule did not seem to hear the click of the shutter, but when, by continued pulling of the thread, I caused surrounding reeds to sway, she scrambled precipitately off her nest.

Our first acquaintance with the home life of the Pied-billed Grebe was made through the discovery of a bird, who could not have been more than a few hours old, but who was already an adept at diving. Indeed it was very difficult to follow him as he made quite extended swims under the duck-weed. He was a sleek and strangely striped little creature, suggesting somehow both in form and markings a peculiar fitness for his submarine excursions. He was quite alone when found, neither brothers and sisters nor parents being seen anywhere about. But close by was an empty Grebe's nest which he had doubtless just left. Not long afterwards a Grebe was spied sitting upon her nest in a sparse growth of rushes. She did not, however, allow a closer approach than fifty feet before ducking over the edge and disappearing without waiting to cover up her three eggs. This nest was discovered

on Saturday afternoon. When visited again on Sunday morning, it contained four eggs, all neatly covered. The last egg was clean and of a chalky, bluish-white color, easily distinguishable from the others, which were already stained and discolored from the soaking weeds used by the mother to conceal them. I uncovered the eggs to photograph them, and left the camera near the nest for a time in the hope of a possible camera shot. But I do not believe that the bird returned to her nest all day, although once or twice she was seen swimming uneasily about in the water some distance away. The Pied-billed Grebe, I am sure, would be a very difficult bird to photograph on her nest.

During the day we found another Grebe's nest containing one egg, two containing broken shells, and several empty nests. In addition there were at least two Grebe families swimming about in the open water. Unobserved among the cat-tails, we watched for some time one old bird solicitously caring for her five young. We observed the bird's habit of lowering itself in the water on suspicion of danger, and in one instance were treated to the pretty sight of the mother carrying a youngster on her back.

Both American Bitterns (*Botaurus lentiginosus*) and Least Bitterns (*Ardetta exilis*) inhabit the swamp, and on June 17 we found a nest of each of them, to both of which mere good luck led us, in the midst of dense and pathless cat-tail areas. The American Bittern's nest, which was merely a dry platform carelessly constructed at the foot of the rushes, contained five eggs. The Least Bittern's had but one egg. One of the Least Bittern's nests found by Messrs. Hann and Callender on Decoration Day varied from the typical form as found on June 17; for instead of being suspended in the tall cat-tails, it was situated in the top of a tuft of sedges which was growing on a large floating bog. It was open to the sky and almost surrounded by open water. The nest of June 17, was to my mind the most picturesque of the marsh nests seen. The bed of dry rushes, upon which the eggs lie, was placed within a pretty basket of living green reeds, complete even to the handle, as it were, which was formed by drawing together the tops of the cat-tails above the nest.

Least Bitterns were far more numerous than their larger cousins; for while we found several of the smaller birds' nests, and undoubt-

edly missed dozens more, we were inclined to believe that we had found the nest of the only pair of American Bitterns in that part of the swamp. Least Bitterns were not infrequently to be seen on the wing, and toward evening especially seemed inclined to indulge in constitutional flights above the reed tops, where with head drawn back and legs extended to the rear, they would attain considerable headway. They were evidently unaccustomed to human invasion of their retreat, and on coming suddenly upon one of our party, would utter a harsh sibilant note and turn quickly in their course.

With the Coots we made but slight acquaintance. I doubt if there were more than two pairs in the part of the marsh we searched, and we did not find their nests. But there was no doubt of their existence there, as the white shield on their forehead forms a conspicuous field mark, and we identified the birds positively a number of times. Once two birds were seen together. At another time a Coot was seen swimming close to a Gallinule, when the difference between the birds was very marked. The Coot, beside its larger size and darker color, swims higher out of the water and in a different manner from the Gallinule. Continuing the comparison, it might be said that the Gallinule swims at the greatest 'angle' with the water, the tail being raised very high and the forward part of the body dipped so low that the water seems almost to meet over the base of the bird's neck. The Coot swims with less of a tilt, while of the three the plane of the Grebe's back is the nearest parallel with the water.

In the way of miscellaneous birds mention should be made of the Red-winged Blackbirds (*Agelaius phœniceus*) which of course, together with their nests, were abundant in the swamp; also of a Swamp Sparrow's (*Melospiza georgiana*) nest with four eggs found in a bunch of dead cat-tails. Once a Green Heron (*Butorides virescens*) visitor was seen. Then we found a nest containing eggshells, which we put down to the Virginia Rail (*Rallus virginianus*). We took home the largest of the shells for identification, and all evidences seemed to point to this bird, which must undoubtedly have existed in the marsh, although we did not actually see it. But it seemed to us that the one feature lacking to carry us in imagination thoroughly into the heart of some western bird swamp was the presence of a member of the duck family. Nor were we to be dis-

appointed long, for on coming suddenly upon one of the isolated ponds, we saw, to our astonishment, a duck swimming. It made a short flight above our heads and then tried to hide in the rushes. Mr. Hann plunged wildly after it, and smashing the reeds about its head triumphantly produced a Lesser Scaup Duck (*Aythya affinis*). Its presence here at this date was quickly accounted for by the condition of one of its wings which had evidently been badly wounded last shooting season. Even so, how it had found its way to the marsh remained a mystery. At all events after securing its photograph we let it go.

Other visits to the marsh, each resulting in a few more nests and a little more data, were made by Messrs. Hann and Callender on June 23, by Messrs. Hann, Callender and Dr. H. F. Merriam on July 1, and by Messrs. Hann and W. DeW. Miller on August 5. This last visit was largely for the purpose of making a more quiet and minute study of the habits of the birds, as it was by this time late for nests. Mr. Hann wrote me afterwards a letter which contained the following additional information:

"We were surprised at the numbers of the Gallinules. We saw at least fifty separate birds in the open, and counted as many as twenty-eight in a single pool. We saw several of them standing on small tussocks, and when so doing the tarsus was almost perpendicular while the tibia was held at an angle of about forty degrees with the line of the tarsus. One bird we noted stood for twenty minutes on a small tussock not more than six inches across, and besides preening his feathers he would every now and then peck at the duck-weed round about. After a while he got up and flew off with short, moderately quick wing beats and legs dangling down like a rail; he did not rise more than three feet above the water.

"We observed one odd incident. As you know, some of the floating bogs are very unsteady and turn over easily. We saw a Gallinule swim up to a small bog of this sort and as he stepped on the edge, it tilted under his weight. Instead of getting off as one would expect, he simply walked forward, turning it over and at the same time picking at the duckweed on it. I should say that he turned it completely over at least four or five times while I was looking at him through the glasses, and he was so near that I could see every move he made. At times it seemed as if he would lose

his balance and have to step off, but he persistently kept at his game, and it really appeared to me that he did it more for the fun than for what he was getting in the way of food.

"In feeding on the water I never saw the Gallinules dive completely under the surface like the Grebes; they simply ducked their heads under. On such occasions it was a common thing to see them bring up a large bunch of duckweed and pick at certain places as though they were looking for insects or snails. Once I observed four birds at the same time busily engaged in drawing the duckweed toward their bodies and turning it over with their bills in this way. Occasionally, however, we saw the birds swallow large pieces of the duckweed, roots and all, so they evidently also fed upon the weed itself.

"In caring for their young the Gallinules pass food to them if they are very small, but in no case place it in their bills. The older youngsters find their own food altogether. Both parents apparently tend the young, for we saw one family of seven very young birds with two adults getting food for them, and these were the only two out of a number round about which showed any interest in the youngsters.

"We found three dead birds, one adult and a downy young, floating close to each other in one of the pools, and a dead adult on the railroad tracks. One adult was found to have started moulting. All the Gallinules' nests seen were empty. But some of the Grebes were still mating, at least so we interpreted the action of a couple of birds who were playing with and chasing each other. One of them would at times dive and, swimming under water, come up beside the other. Then they would fly after each other so close to the water that their feet patted on the surface. Beyond this we did not observe much new in the habits of the Grebes, as we only saw six or eight and these were very shy and would not allow a close approach like the Gallinules. We found, however, another Grebe's nest containing six eggs about a week old. It was close by the nest you found on June 17, and was perhaps a second attempt of the same pair of birds. We made careful measurements of the nest, as follows: Eighteen inches in diameter at the water line; nest cavity four and one half inches in diameter and one and one half inches deep; top of the nest two and one half inches above

the water (not including the covering of the eggs, which would make it another one half inch); nest about eight inches deep from water line to bottom of structure; attached to cat-tails in three places; at two of these places there were two stalks of cat-tails and only a single one at the third; the double stalks were on opposite sides of the nest, and the single one between these on the inside arc; these stalks were all about an inch in from the edge of the nest; you could pass your hand entirely under the nest except where the stems of the cat-tails came through, so it was thus truly a floating structure merely anchored to the cat-tails, composed of decaying vegetation and almost entirely of cat-tails."

In reference to the food of the Gallinules, it might be added that they are not, as I at first supposed, dependent upon the presence of duckweed, as Dr. Merriam found the birds nesting in a marsh near Chicago, where there was no duckweed at all.

To sum up, five separate visits were made to the marsh during the summer of 1906, comprising four full days and two afternoons. Evidences were found of the following species nesting there: Pied-billed Grebe, American Bittern, Least Bittern, Virginia Rail (?), Florida Gallinule, American Coot, Red-winged Blackbird, Swamp Sparrow, and Long-billed Marsh Wren. Of these birds, the most interesting of course are the Grebe, the Gallinule, and the Coot. In 'American Museum Guide Leaflet, No. 22' (July, 1906) — the latest publication on the birds of the vicinity of New York City, — Mr. Frank M. Chapman says of the Pied-billed Grebe: "Occurs chiefly as a migrant. I know of no definite instance of its breeding"; of the Florida Gallinule: "Its nest has not been found in the immediate vicinity of New York City, where it is known only as a rare migrant"; and of the American Coot: "Recorded as breeding only near Morristown, N. J." Although we failed actually to find the nest of the Coot, we discovered five occupied nests of the Grebes, and seventeen occupied nests of the Gallinules. This latter figure does not, however, give an adequate idea of the numbers of the Gallinules, for at least fifty empty nests were found, all of which must have been constructed this year, as we were informed by some boys that the marsh is burned over each winter for use as a skating pond.

NOTES ON THE SPRING BIRDS OF TISHOMINGO
COUNTY, MISSISSIPPI.

BY ANDREW ALLISON.

IN THE spring of 1904, a month's investigation of ornithological and botanical conditions in the valley of the Tennessee River, where it borders Mississippi, furnished me with some interesting material, upon which I base the remarks that follow.

Tishomingo County occupies the northeastern corner of Mississippi, adjoining Tennessee on the north, and Alabama on the east; the Tennessee River runs northwestward across the northeast corner, constituting the State line, and relieving the otherwise rectilinear character of the county boundaries. The valley of this river is very narrow on the Mississippi side, and the interrupted chain of hills rises again within a few hundred yards of the abrupt bank. These hills are the foot-hills of the Alleghanies; entering the State at this point, they extend southwestward, reaching their maximum elevation of 800 feet in Pontotoc County, and terminating in the extreme southwest, in Wilkinson County.¹

This county is a part of the Yellow Loam Region, which includes about one third of the State;² but, except in the narrow flood-plain of the Tennessee River, and the broader ones of certain important creeks, the soil layer is thin, and easily exhausted. Much gravel is present, and renders much of the land practically unfit for agriculture. The deep soil of the creek and river bottoms is a brown alluvial, of excellent fertility; and the natural growth of these bottoms, subject to frequent inundation, is rich and varied. But the points of geological interest are to be gathered from the hills; and turning to these again, we find them similar to those of northern Alabama, in that they are in large part underlaid by limestones of the drift formation. This limestone bed is so thick that in many cases the hills may be said to be made of it. In my notes I find this record:

¹ J. R. Preston, *Frye's Geography, Mississippi Edition*.

²For some of these remarks on the geology of the region I am indebted to Dr. Hilgard's report on the 'Geology and Agriculture of Mississippi.'

"In a hillside rising immediately beyond a most precipitous descent, is the main opening to a 'silica' mine [so called by the natives] which was abandoned because of the fatality among laborers working up the material — though the miners themselves were not affected. The walls of the cave are of an amorphous, softish, chalky material, now damp and covered in many places with slime and moss. The whole hill appears to be of this material, and so do many of the others near by. The main tunnel is about a hundred yards long."

' In many places on the hills this limestone is present in the form of irregular pieces of blue stone about as large as a turkey's egg. A talus of this sort at the foot of the viciously steep little hills makes climbing very difficult; and often the same rock is encountered all over the hill. In large, flat pieces, often ten or twelve feet square, it forms terraced ledges through and over which the little streams run; and altogether it is the characteristic rock of the region directly bordering the Tennessee valley, where I spent the whole of the month at my disposal.

Though cropping out, as I have said, in many places, elsewhere this blue limestone underlies red sandstone; this I found to be the case near the town of Iuka. And between this point and my destination on the river, I crossed thick, level beds of the yellow loam, wooded with old-field and short-leaf pine (*Pinus taeda et echinatus*), and underlaid with a loose red sand — under which in turn was doubtless the limestone again.

In its flora and fauna this county presents characters of a rather transitional nature; a few examples will serve to show the mingling of species belonging to the Upper and the Lower Austral life-zones respectively — as these have been characterized by Dr. Merriam, — a decided predominance of Carolinian forms being evident.

Of mammals, I found most common the cotton-tail rabbit (*Lepus floridanus mallurus*); the white-footed mouse (*Peromyscus leucopus*); the chipmunk (*Tamias striatus*); the southern gray squirrel (*Sciurus carolinensis*); and the red bat (*Lasiurus borealis*). It will be seen that none of these are species confined to the Austro-riparian zone. The *Peromyscus* is not generally regarded as a southern species at all, and the chipmunk is placed by Dr. Merriam among the mammals of the Transition zone.

Other species were the water hare (*Lepus aquaticus*) and the opossum (*Didelphis virginiana*); of raccoons I could not be sure; but I found pawpaw seeds on logs by the creeks, which must have been left there by either these animals or opossums.

Reptiles were very uncommon, with the exception of two lizards, and all but one were species of rather general distribution. The two lizards referred to are *Sceloporus undulatus* and *Cnemidophorus sex-lineatus*; the Austroriparian *Anolis principalis* I saw rarely — once, oddly enough, on a spray of trailing arbutus! The only snakes I saw were the black form of *Bascanium constrictor*, and one individual of the "spreading adder" (*Heterodon platyrhinus*).

Breeding birds, absent in that capacity from most parts of the State, were: Catbird, Phoebe, Prairie Warbler, and Whip-poor-will; as I shall mention again below, I have hypothetically placed on the breeding list Goldfinch and Robin. But with all these mingle such distinctively southern species as Chuck-will's-widow, Red-cockaded Woodpecker, and Mockingbird. Fuller remarks on these species will follow. Certain birds were noticeably absent — perhaps the most important being Loggerhead Shrike, American Sparrow Hawk, and Red-shouldered Hawk; but their absence was evidently due to local ecological conditions, and is of course of no importance in assigning this county to its place in the life-zones.

It remains now to sketch the flora. The low hills are thickly wooded, though large trees are the exception except in the valleys: old-field and short-leaf pine (*Pinus taeda et echinatus*), hickory (*Hicoria tomentosa*), dog-wood (*Cornus florida*), and numerous species of oaks compose the tree growth; while beneath them flourishes an undergrowth of Ericaceous shrubs.

The oaks are: black-jack (*Quercus marilandica*), post oak (*Q. minor*), scarlet oak (*Q. coccinea*), Spanish oak (*Q. digitata*), and chestnut oak (*Q. prinus*); and the principal species of huckleberry are: *Vaccinium stamineum* (a form with large leaves), *V. corymbosum*, *V. arboreum*, and a small species that seems most like *V. vacillans*. A tree commonly present, but fruiting little, and apparently of vanishing importance, as Dr. Mohr observes of it in Alabama, is the chestnut (*Castanea dentata*). On high summits another pine sometimes relieves the monotony of the common

short-leaf; this is *Pinus inops*. Somewhat local are the beautiful mountain laurel (*Kalmia latifolia*) and trailing arbutus (*Epigæa repens*).

Saxifrages are characteristic herbs of the rocky hills: they are *Saxifraga virginensis* and *Heuchera americana*. Other herbs are: early buttercup (*Ranunculus fascicularis*), white larkspur (*Delphinium virescens*), *Alsine pubera*, Indian pink (*Silene virginica*), bird-foot violet (*Viola pedata*), purple wood-sorrel (*Oxalis violacea*), *Houstonia purpurea*, "everlasting" (*Antennaria plantaginifolia*), and phlox (*Phlox reptans et amœna*).

The lesser valleys between the hills are fringed with the many-tinted "bush honeysuckle" (*Azalea nudiflora*), under which the bare damp earth is flecked with bluets (*Houstonia cœrulea*). Heavy shade, haunted of Wood Thrushes and Acadian Flycatchers, is cast by red maples (*Acer rubrum*) and white oaks (*Quercus alba*). In open places is found the snowberry or coral-berry (*Symphoricarpos symphoricarpos*). Here and there the hills are bordered by swamps; and here black gum (*Nyssa multiflora*); alder (*Alnus rugosa*) and 'bamboo' (*Smilax* spp.) grow, with ferns and white violets flourishing between. The only fern requiring special notice is a maiden-hair (*Adiantum pedatum*), growing on damp hillsides above the swamps.

By the brooksides grow crab-apple (*Pyrus angustifolia*) and red maple; over these clamber honeysuckle (*Lonicera sempervirens*), the naturalized Japanese honeysuckle (*L. japonica*), and bamboo (*Smilax rotundifolia*). Beneath grow spring beauty (*Claytonia virginica*) and anemone (*Syndesmon thalictroides*) in the shade, and cinquefoil (*Potentilla canadensis*) in the sun. Or, in lower places, thickets of alder and thin groves of small willows (*Salix nigra*) may form the stream-fringe.

The old fields in the narrow levels between brooks and hills grow the fragrant pink rose (*Rosa rubiginosa*); the feeble, trailing blackberry (*Rubus enslenii*); and of herbs, speedwell (*Veronica peregrina arvensis*), 'johnny jump-up' (*Viola tricolor arvensis*), the little skull-cap (*Scutellaria parvula*), mouse-tail (*Myosurus minimus*); and a little evening primrose of some importance, because not reported heretofore, I think, from either Alabama or Mississippi — *Enothera linifolia*. Thickets in these fields, as everywhere,

are tangles of blackberry (*Rubus argutus*) and sumac (*Rhus copallina*).

Or, in fields long abandoned, we may find scrubby pines (*Pinus taeda*), among rank 'broom-sedge' (*Andropogon virginicus*) that crowds out almost all other plants; though it gives place, here and there, to patches of wild plum (*Prunus chicasa*).

The low woods of the creek and river bottoms contain birch (*Betula nigra*), water oak (*Quercus nigra*), basket oak (*Q. michauxii*), sycamore (*Platanus occidentalis*),—present also along upland brooks—maple (*Acer dasycarpum*), sweet-gum (*Liquidambar styraciflua*), and cypress (*Taxodium distichum*). In higher ground in the valley are locust (*Robinia pseudacacia*), hackberry (*Celtis mississippiensis*), and sassafras (*Sassafras sassafras*). Common climbers on the border of these woods are trumpet creeper (*Tecoma radicans*) and cross-vine (*Bignonia capreolata*). And on the ground rising from the river I found wild strawberry (*Fragaria virginica*).

Roadside plants are haws (*Crataegus spathulata et mohrii*), moth mullein (*Verbascum blattaria*), and dandelion (*Adopogon dandelion*).

More enumeration would carry me beyond the limits set by the title of this article, which perhaps I have already exceeded; and without further preface I offer the detailed account of the birds observed from April 17 to May 17. The town of Iuka, several times to be mentioned, is about six miles southwest of the farmhouse which I made my headquarters, and is consequently out of the valley of the Tennessee River.

1. **Ardea herodias.** GREAT BLUE HERON.—One seen April 24, flying westward.

2. **Butorides virescens.** GREEN HERON.—Seen occasionally after April 21, at creeks and ponds.

3. **Fulica americana.** AMERICAN COOT.—I saw one swimming in a marshy mill-pond near Iuka, on April 30. The bird may have been a cripple; but if not, it was doubtless one of a breeding pair; for the next time I passed the spot, on May 17, it was still there.

4. **Actitis macularia.** SPOTTED SANDPIPER.—Sparingly present along the larger streams, and at the pond where I saw the Coot.

5. **Colinus virginianus.** BOB-WHITE.—A common bird in the open. It seems to nest quite late; for I flushed several pairs from their task of

constructing their domed nests under tussocks of *Andropogon*, after May 10, and found eggs but once.

I heard rather often a cry that I likened to the wild call of the Pileated Woodpecker; as the birds were flushed, they would dart off with this outburst of peculiarly wild sound; and the effect was startling. I think only the male uttered it; and at times I heard birds apparently answering each other, perhaps in challenge.

6. *Zenaidura macroura*. MOURNING DOVE.—Fairly common, and singing.

7. *Cathartes aura*. TURKEY VULTURE.—Common, not abundant.

8. *Catharista urubu*. BLACK VULTURE.—Much less common than the preceding.

9. *Elanoides forficatus*. SWALLOW-TAILED KITE.—One was seen May 12, flying northward, and accurately described to me.

10. *Accipiter velox*. SHARP-SHINNED HAWK.—Occasional after May 2.

11. *Accipiter cooperi*. COOPER'S HAWK.—Not abundant, but quite regular. On April 19 I found a nest, concerning which the female showed much solicitude. She sailed about, uttering a dry, monotonous rattle, but left when I climbed to the nest. It was about thirty-five feet up in a post-oak. A similar nest, out of repair, was in a tree close by, having doubtless formerly served the same birds.

The occupied nest had a heavy foundation of twigs, overlaid with rootlets; but it was lined with scales of pine bark, on which lay three short oval eggs, quite fresh, but slightly nest-stained.

12. *Buteo borealis*. RED-TAILED HAWK.—I think a pair bred on the hills back of the house in which I stayed; these were the only ones I saw.

13. *Buteo platypterus*. BROAD-WINGED HAWK.—The commonest of the hawks; I found no nests, but saw and heard the birds often.

14. *Haliaeetus leucocephalus*. BALD EAGLE.—A pair flew over, screaming, late in the evening of April 29.

15. *Syrnium varium*. BARRED OWL.—Rare.

16. *Megascops asio*. SCREECH OWL.—Heard one May 10.

17. *Coccyzus americanus*. YELLOW-BILLED CUCKOO.—This bird apparently did not arrive until April 28; after that date one or two were seen daily, until the bulk arrived May 3.

The habit of nocturnal song was very noticeable; I find these entries in my note-book: "May 1 At night I heard the full song of a Yellow-billed Cuckoo, delivered, I thought, while the bird was in flight." "May 8 Almost every night I hear the notes of Yellow-billed Cuckoos; I can rarely be sure whether or not they are flying; usually they are at rest, I think."

18. *Ceryle alcyon*. BELTED KINGFISHER.—Not common.

19. *Dryobates villosus audubonii*. SOUTHERN HAIRY WOODPECKER.—Common.

20. *Dryobates pubescens*. DOWNY WOODPECKER.— Common.
21. *Dryobates borealis*. RED-CKADED WOODPECKER.— Fairly common; very noisy, and not likely to be overlooked when present.
22. *Ceophloeus pileatus*. PILEATED WOODPECKER.— Common, and not especially shy; nor does it confine itself to the deeper forests.
23. *Melanerpes erythrocephalus*. RED-HEADED WOODPECKER.— Not common; it prefers large dead trees in clearings, and these are hardly to be had in this region. The same explanation can probably be offered in the case of the absent Sparrow Hawk.
24. *Centurus carolinus*. RED-BELLIED WOODPECKER.— Not uncommon; mainly confined to the creek woods. I noticed that it utters many of the notes of the preceding species; it is an undoubted fact that there is much local variation in the notes of this bird.
25. *Colaptes auratus*. FLICKER.— Common.
26. *Antrostomus carolinensis*. CHUCK-WILL'S-WIDOW.— Common; but less so than the succeeding species, and arriving later. I heard Whip-poor-wills from the night of my arrival in the valley, April 18, but the voice of this more southern bird was not added to the caprimulge chorus until April 22. It was common after April 28.
27. *Antrostomus vociferus*. WHIP-POOR-WILL.— Very common. The song generally commenced about seven o'clock, on clear nights; and once I heard a Whip-poor-will cry at five in the morning. I heard none at all in bad weather.
28. *Chordeiles virginianus*. NIGHTHAWK.— Fairly common. None were seen until April 24, and I never noted the species as really common.
29. *Chætura pelagica*. CHIMNEY SWIFT.— Common, and of normal habits. I found a nest in the chimney of a deserted cabin in the heart of the hills; and they nested also in the occupied farm-houses.
30. *Trochilus colubris*. RUBY-THROATED HUMMINGBIRD.— Common; the bulk arrived April 22.
31. *Tyrannus tyrannus*. KINGBIRD.— Fairly common; it did not arrive in breeding numbers until about May 1, and never became abundant.
32. *Myiarchus crinitus*. CRESTED FLYCATCHER.— Common from the time of my arrival.
33. *Sayornis phœbe*. PHŒBE.— I thought I heard one of these birds on April 18, and later on I discovered it to be a rare breeder. In the tunnel I have before referred to, cut in the rotten limestone of a steep hillside, I found a nest perched on a narrow ledge about six feet up. It was composed externally of green moss, and contained four young a few days old; they were silent, unemotional little creatures, and made no demonstration when I took the nest down to see them more closely, or when I replaced it.
- The mother waited outside the tunnel, calling frequently. It struck me as singularly appropriate that the first rocky cave I had entered in Mississippi should hold a Phœbe's nest; for in less typical situations we have never noted the bird except as a winter resident.

This was on April 27; the next day I found an old nest — probably of the same pair, since I saw no others — in an abandoned cabin near the cave.

34. **Contopus virens.** WOOD PEWEE.— Common.

35. **Empidonax flaviventris.** YELLOW-BELLIED FLYCATCHER.— I took one May 9, from a flock of migrant warblers.

36. **Empidonax virescens.** GREEN-CRESTED FLYCATCHER.— Common; I noticed it first April 23, and found it common about May 3.

[**Empidonax traillii.** TRAILL'S FLYCATCHER.— On April 26, and on one or two other dates, I thought I saw this flycatcher; but each time I failed of positive identification.]

37. **Empidonax minimus.** LEAST FLYCATCHER.— I took one May 10. It was quite silent, but active, making short excursions from a sparse thicket of sumac and blackberry, and always perching in a scrupulously erect position.

38. **Cyanocitta cristata.** BLUE JAY.— Fairly common; but the small oaks of the hills tempt it less than the larger trees about the town. I found it common in Iuka.

39. **Corvus brachyrhynchos.** AMERICAN CROW.— Common.

40. **Dolichonyx oryzivorus.** BOBOLINK.— This bird I observed three times; on April 30 I saw a flock of about twenty males in an open pasture near Iuka; the next day another flock was reported from a point near the river; and a single female flew over on May 6.

41. **Agelaius phoeniceus.** RED-WINGED BLACKBIRD.— A very local breeder in low fields and marshy ponds, of which situations there are not sufficient to make the bird abundant.

42. **Sturnella magna argutula.** SOUTHERN MEADOWLARK.— Not at all common.

43. **Icterus spurius.** ORCHARD ORIOLE.— A fairly common breeder. I saw several at Grand Junction, Tennessee,— about a hundred miles northwest of Iuka,— on April 16; but the species did not reach this valley until April 23, becoming common about the same time.

44. **Icterus galbula.** BALTIMORE ORIOLE.— I saw this bird also at Grand Junction on April 16, but saw none here until April 24, and none after April 29. It seems unwise to base conclusions on a month's record, but the natural deduction would be, that this valley is a sort of pocket and receives by degrees the overflow from the Mississippi Valley migration stream; though it will be seen from the notes to follow, on the warblers, that this region lies — for some species at least — in a line of migration not originating in the Mississippi Delta. The same theory will not apply to all the species mentioned here, but I offer the above as an explanation of an apparently paradoxical situation.

45. **Quiscalus quiscula æneus** BRONZED GRACKLE.— Breeds commonly in a low wooded park in Iuka; but I saw it only once near the river, on April 28.

46. **Carpodacus purpureus.** PURPLE FINCH.— I saw many females

in the above-mentioned park, on April 17; and the next day I thought I saw several among pine-trees on the hills near the river.

47. **Astragalinus tristis.** AMERICAN GOLDFINCH.—Probably resident. I found much migrational activity when I arrived — April 17 — and the finches continued to flock and sing until April 27; after that date I saw them passing over in pairs, and find them recorded as "constantly passing over" as late as May 6; and I took one of a mated pair on May 7. I found no nests; but I left with a very distinct impression that Goldfinches breed in the Tennessee Valley in Mississippi.

48. **Passer domesticus.** ENGLISH SPARROW.—Present about the farm-houses near the river, and common in Iuka.

49. **Poœcetes gramineus.** VESPER SPARROW.—Saw one in a meadow near Iuka, April 17.

50. **Chondestes grammacus.** LARK SPARROW.—A very handsome individual was feeding with a group of Chipping Sparrows in the Iuka park, on April 17. Of late we have found it not very uncommon in winter on the Gulf coast of Mississippi, but this is our only interior record, though Mr. H. H. Kopman has reported it from Madison Parish, Louisiana, directly across the Mississippi River from Vicksburg.

51. **Zonotrichia albicollis.** WHITE-THROATED SPARROW.—Very abundant in thickets and hedge-rows. I heard them singing as soon as I arrived at my destination, and frequently I found the hillsides covered with the creeping, rustling little creatures, and the thickets bordering the hills deserted; but they withdrew to cover again immediately on any alarm. The bulk left about May 4, and I saw the last May 9.

Once I heard a rather peculiar song that led me to suspect the presence of *Z. leucophrys*; but I soon traced it to its source as an individual peculiarity.

52. **Spizella socialis.** CHIPPING SPARROW.—Abundant everywhere, except in the extremely open country occupied by the following species.

53. **Spizella pusilla.** FIELD SPARROW.—Common in the old fields grown up with *Andropogon*. One of the several nests I found was placed in a tussock of this grass; it was situated among the culms much as the nest of a Red-wing is placed among reeds. It contained four eggs on May 12.

54. **Peucaea æstivalis bachmanii.** BACHMAN'S SPARROW.—Of local distribution, but not uncommon. This is a most interesting bird, and varies much in its habits in different regions; even in the same locality there may be two quite dissimilar songs, as I noticed here,—one quite like that of the Field Sparrow, one like that of the Chipping. The birds of this county are larger and grayer than those of the Gulf coast,—less typical of the subspecies; and they prefer the open country to the pine barrens. I have these notes of their behavior: "I found Bachman's Sparrows again on the border of the pine thicket; they behaved somewhat like Swamp Sparrows in the brush, though on the ground they ran rapidly, flushing from it with the explosive spring of *Coturniculus* or *Passerculus*. One wandered into the thick sedge-grass (*Andropogon*)."

55. **Melospiza lincolni.** LINCOLN'S SPARROW.—This is another very interesting species. We have never been able to detect it in any other part of the State, and I watched its movements closely after I found it here April 23.

It proved to be not uncommon, and lingered until May 15. Generally I found them singly, creeping about in some thicket or hedge-row; but sometimes they crept about fences in a rather wren-like way; and one deepened this impression by concealing itself in a pile of cross-ties by the roadside. After May 10 I watched one whose quarters were in a brush-pile by a brook; it often sang, gliding about like a House Wren, a fine liquid warble much like that of this wren, but of sweeter, lower tone, and much longer duration.

56. **Melospiza georgiana.** SWAMP SPARROW.—I saw none before April 25; it was fairly common April 27, increased May 3, decreased again May 4, and was last seen May 6.

57. **Pipilo erythrophthalmus.** TOWHEE.—Common, and showing no evidence of migratory habits.

58. **Cardinalis cardinalis.** CARDINAL.—Common, and singing finely and constantly.

59. **Zamelodia ludoviciana.** ROSE-BREASTED GROSBEAK.—I saw a very handsome male on May 2, with a flock of Bay-breasted Warblers; it uttered a peculiar and indescribable note.

60. **Cyanospiza cyanea.** INDIGO BUNTING.—This species became very abundant April 24—the first I saw of it. These were mostly males. I heard one sing at night on April 30. It was present mainly in the capacity of a migrant until about May 3, when its numbers decreased; another wave passed through May 9; by May 14 all but breeders were gone, I think, and I found a nest with two eggs on May 15. The birds were very shy, and I saw the brooding mother only after several stealthy approaches.

61. **Piranga erythromelas.** SCARLET TANAGER.—First seen in Iuka April 17; the next appeared April 22, after which I found them fairly regular until the last left on May 12. Nearly all were males, but I heard the song only once.

62. **Piranga rubra.** SUMMER TANAGER.—This bird appeared April 19, and was common after April 25.

63. **Progne subis.** PURPLE MARTIN.—Common in Iuka when I arrived. But evidently migration was not over; for on April 21 a flock of about fifteen martins suddenly appeared, silent as spirits, and alighted in a huddled group on a dead tree near me. On May 3 and 5 a pair prospected without success, probably seeking a site for a second nest, in a sparrow-haunted martin-box near the house where I stayed.

64. **Hirundo erythrogastra.** BARN SWALLOW.—Present from the time of my arrival until May 11; but never common, and rarely singing.

65. **Iridoprocne bicolor.** TREE SWALLOW.—I saw some with Rough-winged and Barn Swallows flying over a meadow near Iuka, April 17.

66. **Stelgidopteryx serripennis.** ROUGH-WINGED SWALLOW.—I found

no nests, but the species was evidently breeding in the limestone banks of the brooks near the river, as well as in suitable places near Iuka. I thought often that Bank Swallows must be mingled with the Rough-wings, but careful search revealed none. One individual I saw was characterized by a white tail-feather.

67. *Ampelis cedrorum*. CEDAR WAXWING.—A small flock appeared May 6, and some may have remained to breed; but I heard them last on May 16; and, since even at New Orleans they may be seen all through May, no special significance attaches to their presence here at such a date.

68. *Vireo olivaceus*. RED-EYED VIREO.—The commonest breeder of the region; present continuously, and abundant from April 22.

[*Vireo philadelphicus*. PHILADELPHIA VIREO.—I saw one at Grand Junction, Tennessee, on April 16; it was on the border of an oak grove wherein were other migrants.]

69. *Vireo flavifrons*. YELLOW-THROATED VIREO.—Not common as a breeder, but quite so as a migrant up to the last week of April. The song is distinguishable from that of the Red-eye by its greater depth, richness, and deliberation.

70. *Vireo noveboracensis*. WHITE-EYED VIREO.—A very common breeder.

71. *Mniotilta varia*. BLACK-AND-WHITE WARBLER.—Present from the first, and abundant nearly throughout my stay, though fluctuating in numbers. I found it fairly common on May 20 in Amite County, nearly four degrees further south; and I therefore cannot assign May 14—the day I last saw it in Tishomingo County—as the end of its spring sojourn. It certainly breeds.

The great versatility of this warbler in vocal effects was well illustrated during this time; I know of no other warbler except the Chat that can produce so great a variety of sounds; and since nearly all of the notes resemble those of other warblers, this is a most confusing bird to deal with during the busy season of "waves."

72. *Helminthus vermivorus*. WORM-EATING WARBLER.—Present from the first, and common until quite late; it ceased to be apparent during the latter part of my stay, but I found it with *Mniotilta* in Amite County.

73. *Helminthophila pinus*. BLUE-WINGED WARBLER.—I first observed it April 18; it became common April 21, and thereafter fluctuated until May 8, after which it remained common in the open regions bordering woods. Its monotonous song, generally uttered at short intervals from near the top of a tree, while the singer sat motionless, was a familiar sound.

74. *Compsothlypis americana ramalinae*. WESTERN PARULA WARBLER.—Several very diverse specimens of this species were all referred by Mr. Oberholser to this subspecies. It was never common, and as a breeder it seems rare.

75. *Dendroica tigrina*. CAPE MAY WARBLER.—I took a male from a flock of migrant warblers on May 4. This is the first record for Mississippi,

and there is but one for Louisiana—also a spring record, from New Orleans. Evidently this species is one of those not entering the Mississippi Valley route by way of the delta.

76. *Dendroica aestiva*. YELLOW WARBLER.—Sparingly present from April 17 to May 1.

77. *Dendroica caerulescens*. BLACK-THROATED BLUE WARBLER.—I saw a male on April 29, with other migrant warblers. This is another bird new to the State list, and almost unknown in Louisiana.

78. *Dendroica coronata*. MYRTLE WARBLER.—Very common, in bright, though incomplete, plumage, and fine song, up to April 26; after this less common until it left on May 5.

79. *Dendroica maculosa*. MAGNOLIA WARBLER.—A late migrant, as it is everywhere in the State. I saw it first on May 3, and it was present rather commonly until May 16.

80. *Dendroica pensylvanica*. CHESTNUT-SIDED WARBLER.—I took a male on May 9; it was in fine song—a long warble like that of House Wren.

81. *Dendroica castanea*. BAY-BREASTED WARBLER.—Very common from time to time, but always in close flocks. It mingled freely with other species, but it was very noticeable that the two sexes of this species were rarely to be seen in the same group. I also found that it showed rather a fondness for pine trees, when these occurred among the oaks, which was not shared by any of the other migrant warblers. I saw the first April 29, and the last May 9.

82. *Dendroica striata*. BLACK-POLL WARBLER.—Common in varying degrees from April 26 to May 3; these were almost all females. After this came a period of rarity, and the last—one of the few males seen was taken on May 12. This one was singing a feeble cricket-like song, and after long search I discovered it actively exploring the branches of a Spanish oak on the border of a field.

83. *Dendroica blackburniae*. BLACKBURNIAN WARBLER.—Rather common from April 27 to May 5. Males predominated, and sometimes sang their weak imitation of Indigo Bunting's song.

84. *Dendroica virens*. BLACK-THROATED GREEN WARBLER.—Present from April 23 to May 10; generally common, though flocking less than some of the other species; and well distributed. I noticed two distinct songs, neither strikingly original: one, a rather featureless trill, I have described in my notes as "Paruloid"; the other smacked strongly of the Chickadee's notes.

85. *Dendroica vigorsii*. PINE WARBLER.—Abundant, and very noisy.

86. *Dendroica palmarum*. PALM WARBLER.—It seems singular that this form of Palm Warbler should occur here, in place of *D. p. hypochrysa*, our common Mississippi coast form; but this was the case, and on one day it was very abundant. I first noticed it April 19—though it doubtless winters—and on April 22 it was abundant with other warblers in *Vaccinium* undergrowth on the hillsides; after this it was not abundant, but lingered until May 6.

87. **Dendroica discolor.** PRAIRIE WARBLER.—A common breeder in the cleared regions that have grown up in thickets; and an abundant migrant, its wiry trill being sometimes one of the conspicuous bird voices of the hillsides. I first heard it April 19; found it abundant with Palm Warbler April 22; after April 23 the residents scattered, and the great majority left the woods for the fields.

88. **Seiurus aurocapillus.** OVENBIRD.—I was sure of seeing this usually common bird only once; I took one May 4.

89. **Seiurus motacilla.** LOUISIANA WATER-THRUSH.—A breeder along the brooks and creeks, but not common. I first heard it April 19, uttering its clear, far-reaching song by the side of a rocky brook.

90. **Geothlypis formosa.** KENTUCKY WARBLER.—Present at the time of my arrival; less common later, the surplus probably passing to wider bottom-lands as was doubtless the case also with Black-and-white, Worm-eating, Western Parula, Hooded Warblers, and Redstart.

91. **Geothlypis trichas brachidactyla.** NORTHERN YELLOW-THROAT.—The Yellowthroats I collected on this expedition are now in the hands of Mr. F. M. Chapman, and have not yet been passed upon; but I refer them provisionally to this subspecies. It is common in suitable localities.

92. **Icteria virens.** YELLOW-BREASTED CHAT.—Very common in alder and blackberry thickets. First noted April 23, when it was tolerably common; the bulk arrived about May 1. I found nests with eggs on May 10 and 16.

93. **Wilsonia mitrata.** HOODED WARBLER.—Common when I arrived, and present through my stay; but of course absent from the hills after about May 1.

94. **Wilsonia canadensis.** CANADIAN WARBLER.—First seen May 3, last seen May 11. Tolerably common, but always single; it was very active, and often sang a pleasing little lay possessing well-marked generic characters.

95. **Setophaga ruticilla.** AMERICAN REDSTART.—I saw a female on April 24, and noted the last of the hill migrants soon after this. Doubtless I could have found breeders in the swamps later than this. It was at no time common.

96. **Mimus polyglottos.** MOCKINGBIRD.—Not very common. I found a nest containing three eggs on May 10, and by May 14 the young were hatched.

97. **Galeoscoptes carolinensis.** CATBIRD.—A very common breeder, and a very abundant migrant. On April 24 Catbirds were everywhere; but they soon settled down to breeding numbers; and on May 14 and 16 I found nests with full sets of eggs.

98. **Toxostoma rufum.** BROWN THRASHER.—Doubtless a constant resident; its numbers underwent no fluctuation while I remained, and it was always a familiar bird of the thickets. I found a nest with eggs on April 25; these did not hatch until about May 9. On May 15 I found another nest with two eggs.

99. *Thryothorus ludovicianus*. CAROLINA WREN.—A common resident.

100. *Thryomanes bewickii*. BEWICK'S WREN.—Not common; but evidently it breeds about the farm-houses, and also in Iuka; and I saw a pair at Grand Junction, Tennessee, on May 17. Though less exuberant than the foregoing, this wren seems to be always in song.

101. *Troglodytes ædon*. HOUSE WREN.—Not common; I saw the last April 27.

102. *Sitta carolinensis*. WHITE-BREASTED NUTHATCH.—Not very common.

103. *Sitta canadensis*. RED-BREASTED NUTHATCH.—I saw one of these birds at Grand Junction, Tennessee, on April 16, in an oak grove with other migrants; and on April 28 I saw a pair on a high hill near the river. The male was sitting quite motionless at first, uttering a wild, querulous, long-drawn cry, which seemed to be a call for the female; for the latter soon appeared, and the male then resumed his wonted voice and activity.

104. *Sitta pusilla*. BROWN-HEADED NUTHATCH.—Common.

105. *Bæolophus bicolor*. TUFTED TITMOUSE.—Very common.

106. *Parus carolinensis*. CAROLINA CHICKADEE.—Less common than the preceding.

107. *Regulus calendula*. RUBY-CROWNED KINGLET.—Present, in less than winter numbers, and singing, until May 1.

108. *Poliophtila cærulea*. BLUE-GRAY GNATCATCHER.—Already common when I arrived.

109. *Hylocichla mustelina*. WOOD THRUSH.—One of the commonest breeders; I found the nests of past seasons in every little hollow, though I failed to locate any occupied. It was present when I arrived, and I saw it also at Grand Junction, Tennessee, on April 16.

110. *Hylocichla fuscescens*. WILSON'S THRUSH.—Not common; first seen April 20, last seen May 3.

111. *Hylocichla ustulata swainsonii*. OLIVE-BACKED THRUSH.—Sparingly present from May 2 to May 16.

112. *Hylocichla aliciae*. GRAY-CHEEKED THRUSH.—Quite uncommon; first seen April 22, last seen May 5.

113. *Hylocichla guttata pallasii*. HERMIT THRUSH.—Decreased gradually from fair numbers, until the last left on April 26.

114. *Merula migratoria*. AMERICAN ROBIN.—This bird probably breeds in the wooded park at Iuka; I had no opportunity to go there when I passed through the town on May 17; but I had seen there, on April 30, birds that I supposed to be breeding. The last near the river passed through May 3; there were three. I took a female, and found her very fat, but in poor plumage.

115. *Sialia sialis*. BLUEBIRD.—Common. Parent birds were leading about fledged and flying young on May 13; but a nest found May 11, in a hollow fence-post, contained five eggs.

THE RIO GRANDE SEEDEATER, ITS STATUS AND
TECHNICAL HISTORY.

In 1851, Mr. George N. Lawrence (Ann. N. Y. Lyc. Nat. Hist., V, 1852, p. 123) described what was evidently a male specimen of the Rio Grande Seedeater, "procured in [Brownsville] Texas by Capt. J. P. McCown, U. S. A.,"¹ but instead of giving it a new name referred it to *Spermophila albigularis* Spix, from the province of Bahia, Brazil. Four years later Dr. P. L. Sclater (P. Z. S., 1856, p. 302) provisionally referred Mr. Lawrence's *S. albigularis* to *S. moreletti* Bonap., based on specimens from Guatemala. This determination appears to have passed unchallenged till 1888, when Dr. R. B. Sharpe (Cat. Bds. Brit. Mus., XII, 1888, p. 124) identified the Rio Grande bird as *S. parva* Lawr., and gave the range of *S. moreletti* as from "Yucatan to Guatemala, Honduras, and Costa Rica," referring *moreletti* of authors, from Mexico and Texas, to Lawrence's *parva*.

In the meantime Mr. Lawrence had not felt convinced that Sclater's decision was correct, and in 1889 (Auk, VI, Jan. 1889, pp. 53, 54) summarized the history of the case, pointing out the differences separating the Rio Grande bird from both *S. parva* and *S. moreletti*, and naming the Rio Grande bird in honor of Dr. Sharpe, "as he is," said Mr. Lawrence (*l. c.*, p. 54) "the only one who has recognized it as being distinct from *S. moreletti* Bp." Mr. Lawrence called it *Sporophila moreletti sharpei*, and under this designation the Rio Grande bird was entered in the second edition of the A. O. U. Check-List. It was correctly recognized under this name until its status was again challenged by Mr. Ridgway, who, in his 'Birds of North and Middle America' (Part I, 1901, p. 575), considered it indistinguishable from *Sporophila moreletti*. In commenting on the case (*l. c.*, footnote) he says:

¹ This interesting specimen, a male, is No. 41296, in the collection of the American Museum of Natural History, from the Lawrence Collection. On the original label is inscribed in Mr. Lawrence's handwriting, "Spermophila, believed to be a new species." Mr. Lawrence's label, written some time later, has "Spermophila moreletti Pucheran, juv. ♂, Texas," and, on the reverse side, "Brownsville, J. P. McCown."

"I find myself unable to subdivide this species satisfactorily. It is true specimens representing the fully adult male plumage described above are wanting in the series from the State of Tamaulipas and the adjacent parts of Texas: but males from that district agree exactly in plumage with immature males from more southern localities, and I believe that fully adult males have simply not yet been taken in the region designated."

On the basis of this "belief" *S. m. sharpei* was relegated to synonymy. The statement that "specimens representing the fully adult male plumage" of *S. morelleti* are wanting from the Rio Grande region is quite true, as is also the statement that males from this district "agree exactly [or nearly] in plumage with immature males from more southern localities." Although the "belief" based on these facts proves to have been unwarranted, the A. O. U. Committee, on the basis of the very inadequate material in the U. S. National Museum, gave this opinion its endorsement, and in the Twelfth Check-List Supplement (Auk, XX, July, 1903, p. 353) eliminated the subspecies *sharpei*.

Having had occasion recently to examine certain other Texas birds, the case of the Rio Grande *Sporophila* came also under notice, with the result that the fine series of these birds in the American Museum of Natural History (formerly in the Sennett Collection) furnishes indubitable evidence that the adult males of the Texas form do not acquire the broad black pectoral collar and the black back of typical *morelleti*, and that in consequence of their resemblance to immature males of true *morelleti* have been considered as also immature. Many scores of Texas specimens of *Sporophila* have found their way into collections, and it is surprising that the absence of males with a glossy black back and a broad black pectoral collar has not suggested the real solution of the case.

The American Museum of Natural History contains a series of 62 specimens of the *Sporophila morelleti* group. Of these 26—16 males and 10 females—are from Texas (8 from Brownsville, 17 from Lomita Ranch, 1 from Rio Grande City); 11 (10 males, 1 female) from Nuevo Leon (Montemorelos and Monterey); 6 males and 2 females from Tampico, Tamaulipas; 18 (14 males, 4 females) from southern Vera Cruz, Honduras, Yucatan, Guatemala, and Costa Rica. They are separable into three series: (1) Texas and

Nuevo Leon, (2) Tampico, (3) southern Vera Cruz and south to Costa Rica. The Texas series of 16 males presents three phases of plumage — 3 fully adult birds, 10 birds of the second year, and 3 yearling birds; of the 10 females all are adult except 2. Of the 10 breeding males and 1 female from Nuevo Leon, 9 of the males are in immature plumage, probably of the second year. Of the Tampico birds, 6 males and 2 females, 3 of the males and the 2 females are in mature plumage, the other 3 males in the transition plumage of the second year, although evidently breeding birds. These northern birds (37 are from the Rio Grande Valley), of whatever age or sex, are very different from birds of corresponding age and sex from southern Vera Cruz, Yucatan, Honduras, and more southern localities, the northern and southern forms being distinguishable as follows:

S. morelleti morelleti.

♂ ad. Sides and top of head, nape, back, wings and tail intense black; chin and throat, sides of neck, rump, and whole lower surface white, except a broad pectoral band of black; also a white speculum at base of primaries and tips of lesser and greater coverts white.

♂ juv. (second year). The areas black in the adult are irregularly mottled with deep black and olivaceous brown; below yellowish buff, with a patchy irregular pectoral band of black; rump olivaceous brown; wings and tail deep black.

S. morelleti sharpei.

♂ ad. Sides and top of head and nape dull brownish black; back brownish gray, more or less mottled with black, but generally the black of the dorsal surface is mainly concealed by the gray of the surface; wings and tail dull black, with white bars and speculum as in *morelleti*; chin, throat, sides of neck, rump, and whole ventral surface dull white, the breast mottled with black, mostly concealed, in place of the broad pectoral band in *morelleti*.

♂ juv. (second year). Head grayish brown mottled with black, or dull black with the feathers broadly edged gray or brownish gray; back gray brown, with or without more or less concealed or partly concealed blackish feathers; throat, sides of neck, and whole lower parts dull buffy white, with or without concealed mottling of black on the breast; wings and tail brownish black.

♂ juv. (first winter). Upper parts ochraceous brown, grayer on the head, more ochraceous on the lower back and rump, with usually a few specks of black on the head and pectoral region; below deep ochraceous; wings and tail ochraceous brown externally, the inner and basal portions of the quills brownish black; in other words, nearly like the female.

♂ juv. (first winter). Upper parts grayish brown, head clearer gray, lower back and rump dull buffy brown, with flecks of black on the head, mostly concealed or wanting; below pale buff; quills blackish, externally edged with grayish brown; in other words nearly like the female but grayer, with a tendency to concealed or partially concealed black on the head.

♀ ad. Above yellowish olive tinged with brown, below dull clay-color varying (in different birds) to raw sienna; distinct whitish wing bars.

♀ ad. Above uniform dull grayish olive; below pale buff; distinct whitish wing bars.

In other words, without regard to the less amount of black and its much duller tone in the northern birds, the general coloration at all stages and in both sexes is very different in the two forms. It is as strikingly pronounced in the females as in the males, the grayish olivaceous of the upperparts, and the pale buff of the lower parts, in the northern form (Texas and Nuevo Leon birds) being in strong contrast with the deep brownish yellow olive of the upper parts and the clay-color of the lower parts in the southern form (Yucatan and Honduras birds). The young males and middle-aged males of the two forms differ in the same way, in general coloration, as the females; in the middle-aged and old males there is the same marked difference in the amount and tone of the black.

The Tampico series is somewhat intermediate between Rio Grande and Honduras birds, but much nearer, as would be expected, to the northern form. They have the same grayish brown dorsal plumage, and the same dull whitish or buffy underparts, but seem to tend in adult males to the development of a larger amount of black on the back and to a deeper tone on the ventral surface in females, and young birds.

Sharpe seems to have properly separated the two forms geographically but referred the northern form to the wrong species. Lawrence in naming this form took for his male type specimen

(Am. Mus. No. 84610), an adult male collected July 21, 1880, at Lomita Ranch, Hidalgo Co., Texas. It has a few black feathers in the pectoral region and many in the back, the specimen being in moult from the immature to the mature plumage. The female type (Am. Mus. No. 84611) is an adult female in fresh spring plumage, taken at Lomita, March 19, 1880.

THE EASTERN FORMS OF *GEOTHYLPIS TRICHAS*.

BY FRANK M. CHAPMAN.

SEVENTEEN years ago, under the above-given title,¹ I described a Florida form of *Geothlypis trichas* as *Geothlypis trichas ignota*, which was later shown by W. Palmer² to extend through the coast region westward to Texas (Jackson County, Jan. 6) and northward to the Dismal Swamp in Virginia.

At the same time Mr. Palmer restricted the name *trichas* of Linnæus to the Yellow-throat breeding from southern New England southward through the Piedmont region into Georgia, while to the Yellow-throat breeding from southern New England northward he applied the name *brachidactyla* of Swainson.

This ruling was accepted as correct by the A. O. U. Committee on Classification and Nomenclature, and we have had, therefore, east of the Alleghanies, three forms of Yellow-throat, a southern, a middle, and a northern. Many ornithologists, however, regarded this view of the nomenclatural status of these birds as far from satisfactory. That there was a Southern Yellow-throat and a Northern Yellow-throat was beyond doubt, but that an intervening form was also deserving of recognition by name has been frequently questioned. This opinion is voiced by Mr. Brewster³ who says: "The characters by which the two forms are said to be separable seem to me trivial and I fear they are also inconstant . . ."

¹ Auk, VII, 1890, 11.

² *Ibid.*, XVII, 1900, 223.

³ Birds of the Cambridge Region, 1906, p. 354.

In preparing the manuscript for a monograph of North American Mniotiltidae it seemed desirable, therefore, to reconsider the relationships of these birds. To this end Mr. Ridgway has kindly loaned me the pertinent specimens under his charge. I have also had birds from Doctors Bishop and Dwight, and have examined the collections of Mr. Brewster, of the Biological Survey, as well, of course, as the specimens in the American Museum of Natural History.

This material shows that the middle Yellow-throat, the so-called *trichas*, averages smaller and paler than either of the forms south (*ignota*) or north (*brachidactyla*) of it. The differentiation is so slight, however, and is so frequently bridged by variation as to invalidate the claim for distinction by name of this central form.

This, it is true, is a matter of opinion, but in examining the literature bearing on the question an interesting discovery was made which places the whole matter in a new light.

In applying the name *trichas* to the Yellow-throat of the Middle States Mr. Palmer accepted the prevailing opinion that the type locality for this form is Maryland. It appears, however, that this is not the case, the specimen which Edwards¹ figured and described, and which is cited first by Linnæus,² not having come from Maryland but from Carolina! Edwards's (*l. c.*) statement of its origin is as follows: "This bird was the property of Mr. Elliot, Merchant, in Broad Street, London, who received it, with others, preserved in spirits, from Carolina, in North America; and was so obliging as to lend them all to me, to take drawings of them" (*l. c.*). The origin of the name "Maryland Yellow-throat," which Edwards gave to his Carolina bird, as well as the cause for the erroneous belief that his type came from Maryland, is revealed by the remarks which follow the quotation just given. He continues: "J. Petiver, in his *Gazophylacium*, plate VI. has given the figure of a bird, which I believe to be the same with this; for which reason I continue the name he has given it: all he says of it is, '*Avis Marylandica gutture luteo*, the Maryland Yellow-Throat. This the Rev. Mr. H. Jones sent me from Maryland.' Petiver's

¹ Gleanings of Nat. Hist., 1758, I, p. 56, pl. 237.

² Syst. Nat., ed. 12, 1766, 293.

figure is of the same size with mine, and hath such a black line from the forehead drawn through the eye: it hath, I believe, never till now been described, Petiver having given it only a name.

"P. S. Since the writing of the above, I have received the Yellow-Throat, together with a drawing of it, very neatly and exactly done, by Mr. William Bartram, of Pennsylvania, who hath enabled me to give a further account of this bird; for he says, it frequents thickets and low bushes by runs (of water, I suppose, he means) and low grounds; it leaves Pennsylvania at the approach of winter, and is supposed to go to a warmer climate."

The "Carolina" of Edwards, who wrote in 1758, included the North and South Carolina of to-day, his type, therefore, coming from within the range of *ignota*. The question, however, may properly be asked whether Edwards's type was not a migrant and hence, under the current status of this group, either *trichas* or *brachidactyla*. But, assuming that Edwards's type *had* come from Maryland, it might with equal pertinence be asked, how should we know that it was not a migrant *brachidactyla*?

Again it has been said that the present writer refused to accept Audubon's name *roscoe* for a Yellow-throat described from Mississippi as applicable to the form known as *ignota* on the ground that Audubon's type was doubtless a migrant from the north. (It was shot in September). The name *roscoe* was not rejected primarily for this reason, but because Audubon himself, presumably on the basis of actual specimens, referred his *roscoe* to the bird then known as *trichas*, and without positive evidence which would prove him to have been in error we have absolutely no right to reverse his determination.

On the basis, therefore, of locality alone, the name *trichas* is applicable to the southern Yellow-throat heretofore known as *ignota*; but, as a matter of fact, we have something more than mere locality on which to base an opinion, Edwards's figure and description being obviously more applicable to the southern than to the northern bird, while, although this now has no nomenclatural bearing on the matter, Audubon's figure of *roscoe* is quite as certainly *not* based on the southern form.

What then, assuming that this view of the matter is correct, becomes of the form lately known as *trichas*, the Maryland Yellow-throat?

Wilson used the Brissonian name *marylandica* as a pure synonym of *trichas*, with which *personatus* of Swainson is also synonymous. Fortunately, therefore, unless someone desires the questionable distinction of standing as sponsor for the form lately known as *trichas*, we shall not have to consider its claims to nomenclatural standing but may apply Swainson's name *brachidactyla* to all the Yellow-throats north of the range of *trichas* (= *ignota* Chapm.). Thus we shall have in eastern North America:

Geothlypis trichas trichas (Linn.).

SOUTHERN YELLOW-THROAT.

Turdus trichas Linnæus, Syst. Nat., Ed. 12, I, 1766, 293. (Type locality, Carolina.)

Range.—Florida, westward through the Gulf Coast region to Texas; north through the Atlantic Coast region to Virginia (Dismal Swamp); winters from South Carolina southward and also in Cuba (*cf.* Ridgway).

Geothlypis trichas brachidactyla (Swains.).

NORTHERN YELLOW-THROAT.

Trichas brachidactylus Swainson, Anim. in Menag., 1838, 295. (Type locality, "northern provinces of the United States".)

Range.—North America from the "more western portion of the Great Plains" (Ridgw.) eastward, north to Manitoba and southern Labrador, south to the Austroriparian region; winters from the Gulf States southward to the Bahamas, Greater Antilles, Mexico, and Central America.

ORIGIN OF THE FORMS.

An interesting fact developed by Mr. Palmer (*l. c.*) in his discussion of the relationships of these birds is that the central form of the Yellow-throat, to which he restricted the name *trichas*, averages smaller and paler than the form to the north and to the south of it. The extreme northern form of Yellow-throat, therefore, is, apparently, not connected with the southern Yellow-throat by,

so to speak, a graduated scale of regularly arising, cumulative differences, but at their points of contact they are more unlike than at their geographical extremes.

We consequently are led to consider the possibility of the Yellow-throats having acquired their present range through some such method of progress as the Grackles appear to have followed,¹ and an earlier stage of which the Loggerhead and Migrant Shrikes exhibit. An apparently not dissimilar case is afforded by the Parula Warblers, in which the New England form is the same as that found in the Mississippi Valley.

In other words, Yellow-throats may have advanced from Florida northward, and also from the Mississippi Valley eastward and northward; when, as has been said, the Northern Yellow-throat is not a direct geographical offshoot of the southern bird, although both doubtless had a common point of origin. Intergradation, therefore, is not necessarily climatic but follows actual contact occasioned by extension of range.

NOTES ON THE EARLY LIFE OF LOON CHICKS.

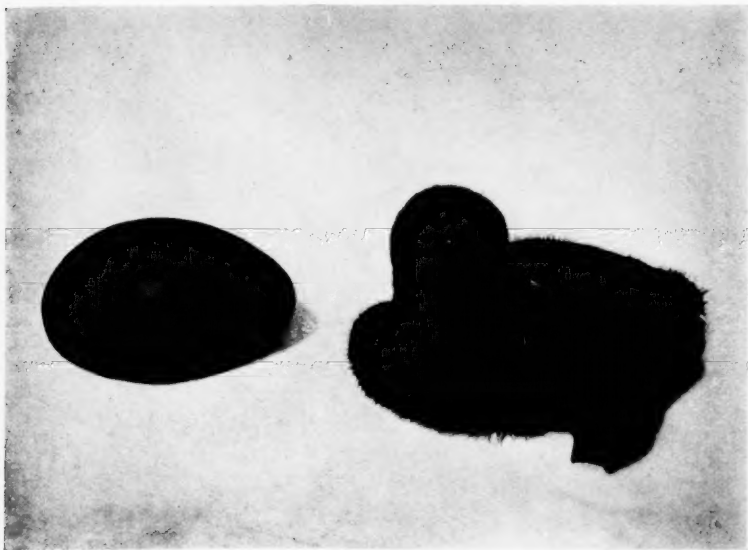
BY C. WILLIAM BEEBE.

Curator of Ornithology, New York Zoölogical Society.

Plate II.

ON AUGUST 4, 1906, two eggs were taken from the nest of a Loon, *Gavia imber* (Gunn.), on a lake of the Muskoka District, Ontario. The eggs were cold, and from observation it was judged that the parents had deserted them some 48 hours previously. Packed in a suit-case, the eggs were brought to New York City and on the evening of August 6, one young loon hatched. The following day this chick was brought to the New York Zoölogical Park, together with the second egg, which was chipped.

¹ Cf. Chapman, Bull. Am. Mus. Nat. Hist., IV, 1892, pp. 1-20.



LOON CHICK, 24 HOURS OLD, AND THE EGG FROM WHICH IT WAS HATCHED.



LOON CHICK, 48 HOURS OLD.



Observations made on the two young loon chicks for ten consecutive days revealed a number of interesting facts in regard to the development of their instincts, and these are especially significant and conclusive because the birds had never seen their parents or their natural environment.

August 7.— Chick No. 1 was hardly dry when I took him from his box. Placed on the floor he can make his way about by spasmodic leaps, frog-like, with both feet at once, falling flat on his breast after each effort. Cannot sit upright.

He pecks eagerly at a finger or anything bright, such as a steel instrument. Several small pieces of fish are eaten and he drinks two medicine droppers of water, soon learning to coördinate his vision with his motions of prehension. His eyes are rather dull, appearing covered with a faint bluish haze, and, except at short range, his vision is poor.

At first he strikes out blindly in the direction of the forceps holding the fish, but after a dozen efforts he can seize the bit of food after the first or second trial. He must certainly take his food direct from the parent's beak, and not by regurgitation.

From time to time, when hungry, he utters low peeps, very like a barnyard chick. After he has eaten six small pieces of fish, he seems satisfied and the plaintive, piping note ceases. Instead, occasionally, a half-smothered, whistling sigh is uttered. This sound is made through the nostrils and sounds like *whew-weeo*.

He settles contentedly down on a bed of dampened leaves. Frequently one of the legs is given a violent shake and lifted high up on the side of the body, the wing then being raised and placed over the foot. Again a leg is stretched out straight behind and held in this position for several minutes.

When placed in a deep tub of water the loon chick swims at once, with very quick, short strokes, alternating with first one, then the other foot. While swimming along, without warning, he pushes his head clear under and looks about beneath him. This is repeated several times during his first ten minutes of aquatic experience.

In the afternoon the loon is given a second swim, this time with a hundred small live fish beneath him. Although he ducks his head several times, he does not see, or at least does not notice, the fish.

August 8.— Chick No. 2 is in difficulty, and I have to roll him out of his shell. When first exposed to the world, every down plume is sheathed in a very fine, hair-like wrapping of tissue, reminding one of the covering of a porcupine or of a week-old kingfisher. In about an hour's time these wrappings begin to split at the tips and at the end of three hours the bird seems covered with tiny, palm-like down, with long, stem-like trunks and fluffy, expanded tips. The chick is very restless and frequently rolls over on his back, regaining his normal position only after a scramble. All this action hastens the unsheathing of the down, the protecting tissue covering the chick with a fine dust, myriads of shreds flying off as one flicks the plumage.

Chick No. 2 preens his feathers before being put into water and this instinctive action aids not a little in ridding the down of the sheaths.

Chick No. 1, now two days old, is strong and apparently in excellent health. He is covered with a short, dense down, sooty brown in color, interspersed with a coat of long, black, filoplume-like down. The lower breast, the belly and the entire under surface of the wings are white. In appearance the down is remarkably like the fur of a beaver or otter, when wet as when dry.

The chick weighs four ounces. The length of the culmen is 14 mm., depth of the two mandibles at the rear edge of nostril, 10 mm.; at tip of mandibles, 4 mm. The length of the body when swimming is about 5 inches, and from the tip of the beak to the back of the head, 50 mm. The great difference between the size of the wing and leg is shown in a comparison of the measurements of the two organs; the wing 30 mm., and the tarsus to end of longest toe, 65 mm.

A typical short down bears a close resemblance to that of a thrush; a thick short calamus, giving rise to sixteen branches, rather thickly set with cilia, an average branch having upwards of two hundred. The longer branches are about 20 mm. in length.

When I partly support the body of the chick, it waddles along very readily over the surface of the table. When its head is suddenly immersed in a tumbler of water, its feet and legs instantly respond, moving so rapidly with simultaneous swimming strokes, that they become almost a blur. The arc of motion is almost at

right angles to the normal position of the legs beneath the body, recalling the condition in *Hesperornis*, where a similar side stroke was necessitated by the angle of the juncture of the femur with the pelvis. When the chick squats, the legs approach each other.

In the course of the morning, chick No. 1 swallows six live killifish, each about 2 inches in length. When the loon is swimming quietly about, I intentionally make a sudden movement overhead, and, like a flash, he leaps forward, head first, and dives, coming up after a few hard strokes. He shows no fear of my hand when moved slowly. In fact by moving my hand along and snapping my fingers, he will follow all over the tank, from end to end and side to side, or in circles, wherever I please to lead.

His hearing is very acute and his vision remarkably keen compared with yesterday.

When violent efforts are being made to escape from the rim of a bowl of water, or when the chick swiftly pursues a fish held in the forceps, the alternating stroke changes to a series of powerful, frog-like strokes, given simultaneously with both feet.

When taken from the water and placed on the pile of dampened leaves, which is my imitation loon's nest, the chick at once begins to preen himself. The first instinctive motions are a twitching of the head around to the sides and back in a way so different from any previous actions that my attention is held at once. After the third or fourth time the loon opens his beak and combs several drops of water from his down. After this he preens swiftly and skilfully until most of the water is shaken or dried from the plumage. After the body is well dried, the tail (or rather the tuft of down representing that organ) is shaken vigorously from side to side and the chick stands erect for a moment, wildly flapping his diminutive wings.

August 9.—Loon chick No. 1, on the third day of his existence, after his first swim this morning, immediately seeks and finds his oil gland, instinctively pressing out a quantity of the oil and rubbing it through the wet down of his breast and sides.

Later he picks up a fish which has dropped from the forceps, seizes it by the tail, and, with successive jerks, passes it through his bill until the head is reached, when he swallows it. There is no hesitation, no vague motion; he knows instinctively that the head must be swallowed first.

On the floor he progresses rapidly by the usual frog-like plunges. Between feeds and sleeps, he spends much of the day in attempting to escape over the six-inch wall of his nest box. By noon, he finds a way to achieve this, crooking his head and neck over a corner and kicking his way over. Wire netting is put over the top and he shows no further desire to get out. He eats ten killifish during the day.

Loon No. 2 seems unwell. His eyes are swollen and partly closed and it is not until noon that I discover the cause to be his brother, who makes most vicious lunges at him, when tired of trying to escape. I bathe the head of the chick with boracic acid and separate the two birds for the night.

August 10.—Both chicks are bright this morning. Number 1 eats seven fish before noon, picking up two himself and swallowing them head-first. Number 2 eats four and picks up one, shifting it as skilfully as his brother. Both preen after bathing and use their oil-glands. Their cries, when hungry, are much louder than yesterday.

There is no doubt about the intermittent feud existing between them. They sleep side by side most of the morning, but at noon when I wake them, they fly at each other like game cocks, rolling over and over in a frenzy of pecking. Both take equal parts in the attack. If not separated they would soon destroy each other's eyes. I do not trust them together again except when under observation.

Most interesting is their response to the loud, rolling cry of a Giant Kingfisher, *Dacelo gigas* (Bodd.), in the Bird House. Other loud cries and calls are audible from time to time, especially the notes of a Seriema and a Crested Screamer, but only the notes of the kingfisher affect the young loons. During all the time that this remarkable sound is in progress, the chicks stand or attempt to rear themselves upright, straining their necks and piping their loudest. By concealing myself and imitating the cry of a loon as closely as possible, I am able always to arouse the young birds and set them piping; but the laughter of the kingfisher never fails to throw them into the greatest fits of excitement. I cannot account for it unless it is that some latent instinct in the young loons is aroused by the similarity of the rolling call of the kingfisher to the wild laughter of the adult loons. There is certainly a close re-

semblance between the two, but that these motherless chicks should recognize it is most unexpected.

August 12.—Loon chick No. 2 this morning, made his first attempts at ducking and washing his head and back. The loud, plaintive chirps which they utter are called forth only by the desire for food, or when the kingfisher is heard, when they become too excited to eat.

August 14.—To-day, when one week old, chick No. 1 has caught two dying fish while they swam slowly through the water beneath him. I have made no attempts to teach them to catch fish, feeding them from forceps while in their nest boxes, so that this is an entirely new achievement for him.

Both birds are moulting hundreds of the long, slender, hair-like down feathers from all parts of the body. None of the multi-branched, typical down has as yet loosened.

August 15.—Each bird has eaten twelve fish to-day, most of which they pursued and caught without help. They take great delight in the water, splashing and washing themselves for an hour at a time.

August 16.—A sudden drop in temperature last night has proved fatal to the young loons, and both are dead this morning, with lungs extremely congested. They are well nourished and otherwise in perfect condition.

Loon No. 1 shows the following measurements. Culmen, 16 mm.; bill and head, 57 mm.; wing, 30 mm.; tarsus and longest toe, 68 mm. This shows an increase of growth in all parts except the wing.

CONCLUSIONS.¹

A. It is probable that young loons are, from the first, fed on whole, not on macerated or regurgitated fish.

B. The actions of swimming and preening are instinctive.

C. The method of swimming is usually by alternate strokes. These become simultaneous when a sudden spurt or great speed is desired.

¹ Comparisons are from observations on an adult loon living in the Park last year.

D. The arc of the swimming stroke, in the young chick, is much more lateral than in the adult bird. This is difficult to explain and hard to correlate with the idea that loons and *Hesperornis* are descended from ambulatory species with more typically Avian convergent hind limbs.

E. Loon chicks can progress more easily and rapidly over the ground than can the adults, in spite of the preceding conclusion. Progression, however, is never by walking, but by frog-like leaps.

F. Diving, catching fish and swallowing them head-first are almost congenital instincts, much improved by practice within the first week.

G. There is no instinctive fear in these young birds.

H. It is probable that the young loons instinctively recognize the usual rolling, laughter-like call of the parents, judging from their reaction to the notes of the Giant Kingfisher.

It is interesting to compare these conclusions with several made in connection with Common Terns, *Sterna hirundo* Linn., and Black Skimmers, *Rhynchops nigra* Linn. These were hatched from the egg and reared to maturity in July, 1903, and are now living in the Zoölogical Park.

A. The call, food and alarm notes of Common Terns, Black Skimmers and Laughing Gulls are instinctive; not taught by parents nor learned by imitation. The one positive proof of this would warrant the assertion.

B. The remarkable disparity in the length of the mandibles in the adult Black Skimmer is foreshadowed even in the embryo and in the newly hatched bird.

C. My experience with a dozen terns and gulls showed that these individuals prefer fresh water to salt.

D. There is absolutely no instinctive fear of man or other objects which enter quietly into the environment of the young birds, but a sudden shadow or loud noise causes them to perform certain acts — wholly instinctive — which have for their object an escape from supposed danger. Under such conditions the terns (which are not so protectively colored as the skimmers) take time to run to the darkest corner or shadow before squatting, while the skimmer crouches instantly, and with two or three instinctive flicks of feet and legs, almost buries himself in the sand.

E. The sight of small but entire fish excites the newly hatched skimmer much more than does macerated fish. Terns are not so excited until after the first week.

F. The action of pecking is instinctive to a certain extent, but is acquired very slowly in this way. By imitation it is learned quickly and is performed successfully within a few minutes.

G. Flight is wholly instinctive, the terns learning the use of their wings as soon as the primaries are large enough to support them.

BACHMAN'S WARBLER BREEDING IN LOGAN COUNTY, KENTUCKY.

BY G. C. EMBODY.

BACHMAN'S WARBLER (*Helminthophila bachmani*) first came to my notice April 26, 1905, when two birds, from their song, were mistaken for Worm-eating Warblers. They were feeding in a maple tree situated in a high, dry wood about ten miles northeast of Russellville, Ky., quite an unusual place for *bachmani*, but of the right sort for *vermivorus*.

Although the surrounding country was searched for a likely breeding ground, none was found nor were more warblers seen.

My field work was continued the following spring (1906) and on May 14, I came upon a swamp fairly swarming with warblers, if one were to judge from the great confusion of songs.

These, one by one, disentangled themselves to my ear into the songs of the Cerulean, Parula, Kentucky, Hooded, Black and White, and Blue-winged Warblers and Redstart. But at frequent intervals there were faint trills which in the open might have passed by as coming from the Chipping Sparrow. I counted several of these coming from as many directions and decided that there were Bachman's Warblers about.

The first song was traced to its source only a short distance away

where I found a small bird sitting quietly on an elm branch about fifteen feet up. A distinct black patch on the upper breast certified to its identity as a Bachman's Warbler.

The next bird, I found in the top of a forty foot oak, sitting close to a large horizontal limb. At times the song seemed to proceed from the different trees round about but investigation invariably showed the bird sitting motionless upon the same limb.

It was while trying to locate the third bird that I brushed past some bushes and heard a bird flutter to the ground. I looked down in time to get a glimpse of a bird scurrying along the ground. Unable to identify the bird accurately, or the nest with three white eggs which occupied the same bush, I waited for her to return when she was collected and found to be a female *bachmani*.

The nest was woven into a tangle of cane and blackberry branches about two feet from a slightly elevated bit of ground within a few feet of a pool of stagnant water. Indeed, these black pools were numerous throughout the swamp.

Lined with a few hairs and some dark colored fibers, resembling tendrils, and covered with several layers of dried leaves held firmly in place by interwoven grasses and rootlets, this nest might have been mistaken for that of the Indigo Bunting.

The eggs measure as follows: $.655 \times .468$, $.643 \times .468$, $.631 \times .474$ inches.

The swamp may be characterized as a low bottom which receives considerable back water during the early spring, but in May is drained leaving only stagnant pools. The tulip tree, sweet and black gums, sycamore, elm and various oaks occur in abundance.

About a mile to the southeast is a second swamp, of three hundred acres or more, bordering a creek of considerable size. This was searched for warblers but fewer *bachmani* were found here than in the first swamp. A solitary Prothonotary Warbler was feeding in some bushes in the centre of a large pool, the only one seen in Logan County.

I counted fourteen male *bachmani* in the first swamp and but eight males in the second swamp.

THE NEST AND EGGS OF BACHMAN'S WARBLER,
HELMINTHOPHILA BACHMANI (AUD.), TAKEN
NEAR CHARLESTON, SOUTH CAROLINA.

BY ARTHUR T. WAYNE.

BACHMAN'S WARBLER was discovered by Dr. John Bachman "a few miles from Charleston in July, 1833," and named in honor of him by Audubon, 'Birds of America,' Vol. II, p. 93.

On May 15, 1901, I rediscovered this species in South Carolina, the specimen (an adult male) being taken near Mount Pleasant, and recorded by me in 'The Auk,' Vol. XVIII, July, 1901, pp. 274, 275. Since the rediscovery of this bird on May 15, 1901, I have made every exertion to find others, but it was not until May 14, 1904, that I succeeded in securing another specimen, which was taken on the plantation of Mr. B. B. Furman, in Christ Church Parish, Charleston County.

On May 13, 1905, I discovered three pairs of these rare birds, and succeeded in taking two young that were being fed by their parents. The young male was being fed by the adult male, and the young female by the adult female! The old birds were not molested. These young birds were the first ever taken, and were described by my friend Mr. William Brewster in 'The Auk,' Vol. XXII, October, 1905, pp. 392-394, and also recorded by the writer in the same volume, p. 399. These birds were observed in I'On Swamp, which was named for the late Col. Jacob Bond I'On (of the U. S. Army in the war of 1812), and which is now a part of Fair Lawn plantation, the property of Mr. B. B. Furman.

That this swamp is the type locality where Dr. Bachman took the birds in July, 1833, there can be little doubt, as there is a strong supposition that Dr. Bachman often visited Col. I'On, and may have taken the birds in this swamp.

The first nest and eggs known to science were taken by Mr. Otto Widmann, in the St. Francis River region of southeastern Missouri on May 17, 1897, and described by Mr. Ridgway in 'The Auk,' Vol. XIV, 1897, p. 309. This nest contained three pure white eggs.

During the spring of 1906, I made a special effort to find the nest and eggs of this rare warbler, and knowing that the birds which I had seen and did not molest in 1905 would return to the same swamp to breed the following spring, I determined to devote my entire time with the hope of finding a nest. On April 17 I succeeded in finding two nests, each of them containing four eggs. The first nest was placed upon a dead palmetto leaf, being supported by a small aquatic bush, and was completely hidden by a living palmetto leaf which overhung the nest, like an umbrella. It was in a dense swamp, two feet above the ground, and contained four pure white eggs, almost ready to be hatched.

The second nest, which was within one hundred yards of the first one, was built in a bunch of canes (*Arundinaria tecta*), and supported by a palmetto leaf. This nest was three feet above the ground, in a comparatively dry situation, and contained four pure white eggs in an advanced stage of incubation. The females were incubating when the nests were found, and I could scarcely realize that I had at last found the nest and eggs of Bachman's Warbler, for which I had looked in vain for nearly twenty-five years, in almost every swamp from the neighborhood of Charleston to the Savannah River.

The female is a very close sitter; indeed so close that I found it necessary to touch her before she would leave the nest. This habit was the same in both females. Having carefully marked the nests, I searched the swamp for others, but was unsuccessful that day. Upon returning to the nests about three hours later, the females were still incubating, and would not leave until they were actually touched with my finger.

The two nests are similar, being constructed of fine grass, cane leaves, and other leaves, the latter skeletonized. The second nest, taken April 17, is $6\frac{1}{2}$ inches high, 6 inches wide, 2 inches wide at rim, and 2 inches deep. It is composed almost entirely of dead cane leaves, a little Spanish moss (*Tillandsia usneoides*), and a few skeletonized leaves. The eggs measure $.60 \times .47$, $.61 \times .46$, $.62 \times .46$, $.61 \times .47$ inches. This nest and four eggs is now in the collection of my friend Col. John Eliot Thayer of Lancaster, Mass.

Knowing that the birds would at once commence to build new

nests, I visited the place almost daily with the hope that I would be successful in finding them; but in this I was mistaken, for while it was comparatively easy to locate the singing males, it was next to impossible to observe the females; in fact, the females were not observed except when they were feeding young birds, and those were not the birds that I had deprived of their nests and eggs. As far as I was able to determine, there were but four or five pairs of these rare birds in the greater portion of the swamp that I explored most thoroughly.

On April 28, I found a nest which contained one young bird, apparently five or six days old, and secured it on May 9 while it was being fed by its parents. This young bird could fly with ease, although the tail was not half developed. The nest which contained the young bird was built in a low bush about three feet from the ground, in the densest part of the swamp, and was within ten or twelve feet of a Swainson's Warbler's nest that contained three eggs. This nest is large and bulky. The foundation is composed of Spanish moss, with distinct layers of skeletonized leaves, interspersed with leaves of the cane and pine needles, which appear at and around the rim.

A deserted nest, which contained three eggs, was found on May 9, in a bunch of blackberry and canes (vertical shoots), within one foot of the ground, on the edge of the swamp and within twelve feet of a Swainson's Warbler's (*Helinaia swainsonii*) nest that contained four eggs. The foundation of this nest is Spanish moss, while skeletonized leaves, a few small twigs, and dead cane leaves constitute the other materials. The interior of the nest is 2½ inches in depth.

On May 12 I found an exquisite nest, placed on a vine and within one foot of the ground, from which the young had evidently but recently flown, as I encountered them in the near vicinage. It is constructed chiefly of a species of moss (*Hypnum*) that grows on low bottom lands more or less covered with water. Interspersed among this moss are dead leaves which are partially skeletonized, as well as a few dead cane leaves. This nest is almost a perfect circle.

The sixth and last nest (from which the young had long since left) was found on June 2, in a low bush, within two feet of the

ground, in a dense thicket in the swamp. It is composed of grasses, parts of skeletonized leaves and pine needles.

All of the six nests that I found are lined with a peculiar black fibre which may be the dead threads of the Spanish moss (*Tillandsia usneoides*) or a black rootlet. The lining of the nests taken on April 17, while very lustrous black, cannot belong to the Spanish moss, which is very distinctly jointed, and I cannot discover any joint whatever in this substance. The nest taken by Mr. Widmann on May 17, 1897, was apparently lined with the same material. In many respects the nest of Bachman's Warbler is very similar to that of Swainson's Warbler.

This species is eminently a swamp lover during the breeding season. The song is wiry or insect-like, and very closely resembles the song of the Worm-eating Warbler, while it also bears a strong resemblance to the songs of the Parula Warbler and Chipping Sparrow.

Although I practically lived in the swamp from April until June 19, in order to determine whether the birds raise two broods, I am convinced that only one brood is raised, as this species is a very early migrant after the breeding season, it having been taken at Key West by Mr. J. W. Atkins as early as July 17.

As the bird is very rare in this State, I am unable to give the dates of its arrival and departure—that is the earliest and latest ones—but I heard a male singing on April 4, 1905, and I think I saw two males about the middle of March. The song of the male is evidently of short duration, as I have not heard it sing later than May 26. The female has no song and its call-note resembles the word *zeep*.

A young male taken May 30, 1906, while partly in the first plumage, and first winter plumage on the back and sides, was, however, assuming the black markings on the jugulum and fore breast of the adult male, while the crown was ashy instead of black. In 'The Auk,' April, 1891, p. 156, Mr. Brewster states: "Our males, thirty-six in number, vary exceedingly in respect to the depth and extent of the black of the head and throat, but most of the black feathers are narrowly tipped with ashy or olive yellow which doubtless disappears later in the season." Mr. Brewster's specimens were taken in March. My breeding males all show the olive yellow edging on the black feathers.

The swamp in which this warbler breeds is heavily timbered and subjected to overflow from rains and reservoirs. The trees are chiefly of a deciduous character, such as the cypress, black gum, sweet gum, tupelo, hickory, dogwood, and red oak. In the higher parts of the swamp short-leaf pines, water oaks, live oaks, and magnolias abound. The undergrowth is chiefly cane, aquatic bushes, and swamp palmetto, while patches of blackberry brambles and thorny vines are met with at almost every step. This primeval forest is flanked on the western side by an enormous reservoir, the water of which is used to flow the rice fields that are in close proximity to the swamp. The entire country is very swampy, but Bachman's Warbler appears to inhabit only a restricted area in one of the many swamps. While I have searched for the bird most diligently in localities which seemed in every respect suitable to its wants, I have met with it only near the reservoir where buttonwood bushes were growing near the edge of the forest. In order to study the habits of this warbler one must be prepared to encounter armies of ticks, red bugs, mosquitoes, and moccasin snakes, with which these dark and gloomy woods are filled.

Bachman's Warbler is a high-ranging bird, like the Yellow-throated Warbler, and generally sings from the top of a sweet gum or cypress. It appears to have regular singing stations during the breeding season, and upon leaving a tree it flies a long distance before alighting. On this account it is impossible to follow the bird through the dark forest, and it can only be detected by its song. I have occasionally seen the males in low gall-berry bushes within six or eight inches of the ground, but their usual resorts are among the topmost branches of the tallest forest trees.

This swamp is a veritable paradise for such breeding forms as the Hooded, Parula, Yellow-throated, Prothonotary, and Swainson's Warblers. The Hooded Warblers are the commonest breeders and they outnumber all the other swamp-loving birds. During the months of April and May the song of thousands of breeding birds, as well as of migrants, fill the swamp with all kinds of music, the finest singers being Swainson's Warbler and the Wood Thrush.

It is difficult to understand what becomes of the vast number of young birds which are annually reared in this swamp country. It seems certain that fully 50% do not return the following spring to breed, for if they did the woods would be simply filled with them.

Since Bachman's Warbler was discovered in 1833 but seven nests have been recorded — one taken by Mr. Widmann on May 17, 1897, and the six which I have described. There is, I believe, another nest and three eggs in the collection of Mr. J. Parker Norris, Jr., that were taken by Mr. Widmann in Missouri, but I am of the opinion that this has never been recorded.

PRELIMINARY LIST OF THE SUMMER BIRDS OF THE
COBALT MINING REGION, NIPISSING
DISTRICT, ONTARIO.

BY FREDERICK C. HUBEL.

THE following annotated list of birds is based on observations made within a radius of ten miles of what is now known as the town of Cobalt, Nipissing District, Ontario, by Mr. J. Wilbur Kay and myself between July 15 and August 18, 1905. Cobalt, situated on Cobalt Lake, is about 100 miles from North Bay junction on the transcontinental line of the Canadian Pacific, and 330 miles almost north of the City of Toronto. When we entered this region, Cobalt was merely a small mining camp consisting of about two dozen huts, a few stores and a station. It has since grown to be a mining town of considerable size, owing to the large deposits of silver for which this region is now famed.

About three miles south of the town is the Montreal River. There are numerous lakes in this region. Lake Temiskaming, by far the largest, lies but a few miles to the east, and although this lake has been a well traversed route to the north by white men for the past two hundred years or more, very little ornithological data has come to light from this region.

This country is a rocky wilderness, much of the field being covered with drift deposits and the exposures of compact rock are

frequently clothed with moss. Here and there hills with steep faces rise to a height of a hundred feet or more. Although lumbering operations have been conducted over almost all of this area, very few clearings exist, as the surface is unfit for agriculture. Here and there forest fires have left their ghastly trails behind.

Among the principal forest growths are Norway, white and jack pine, tamarack, cedar, balsam, and other hardy timber. The second growth is usually birch and poplar, principally the former. The small shrubs are of various species. Although the shores are generally rocky and wooded to the water's edge, considerable marsh land is to be found which affords suitable breeding grounds for water-fowl. The largest of these is at the head of Lake Temiskaming, which covers several hundred acres.

While the present list is in no sense complete, I have preferred to exclude many species which in my mind were doubtful, especially where specimens could not be procured.

1. *Gavia imber*. LOON.—Nearly every day one or more of these birds were observed flying over the lakes. They undoubtedly breed.

2. *Larus argentatus*. HERRING GULL.—Common on Lake Temiskaming. We were told by a native that they breed on a small island at the upper end of the lake. Also observed on Cross Lake.

3. *Aythya affinis*. LESSER SCAUP DUCK.—Several birds observed with their young on Lake Temiskaming.

4. *Branta canadensis*. CANADA GOOSE.—One observed flying over Cross Lake on August 2.

5. *Botaurus lentiginosus*. AMERICAN BITTERN.—Common about the marsh land of all the lakes.

6. *Ardea herodias*. GREAT BLUE HERON.—This species is very common, especially along the marshy creeks where they feed.

7. *Actitis macularia*. SPOTTED SANDPIPER.—The tip-up is abundant along the rocky creeks and along the beaches of the surrounding lakes.

8. *Dendragapus canadensis*. CANADA GROUSE.—Common throughout the timber lands. Many females were observed with their young.

9. *Accipiter velox*. SHARP-SHINNED HAWK.—One bird observed August 2 on a telegraph pole about half a mile below Cobalt. This was the only one met with.

10. *Accipiter cooperi*. COOPER'S HAWK.—A large adult of this species was observed August 12.

11. *Haliaeetus leucocephalus*. BALD EAGLE.—One adult flew over Cobalt Lake, July 18.

12. *Falco sparverius*. AMERICAN SPARROW HAWK.—Four of this species were seen along the railroad south of Cobalt.

13. **Megascops asio.** SCREECH OWL.—One bird of the reddish phase seen in a tamarack swamp near Cobalt Lake.

14. **Bubo virginianus.** GREAT HORNED OWL.—A Frenchman in Cobalt secured three young from a nest near by and put them in a cage. The parent birds visited the cage every night.

15. **Ceryle alcyon.** BELTED KINGFISHER.—Several pairs observed every day. Breeds.

16. **Dryobates villosus.** HAIRY WOODPECKER.—Single individuals were met with every day or so.

17. **Dryobates pubescens.** DOWNY WOODPECKER.—This species was abundant in all sections.

18. **Picoides arcticus.** ARCTIC THREE-TOED WOODPECKER.—This species was found abundant in all sections visited. Undoubtedly the most common woodpecker.

19. **Picoides americanus.** AMERICAN THREE-TOED WOODPECKER.—But two birds seen, on August 8 and 11, near Cross Lake.

20. **Sphyrapicus varius.** YELLOW-BELLIED SAPSUCKER.—Fairly abundant at all times. Breeds.

21. **Ceophloeus pileatus.** PILEATED WOODPECKER.—Three of these birds were met with July 30, near Haileybury.

22. **Colaptes auratus luteus.** NORTHERN FLICKER.—Rather common about the less thickly timbered land.

23. **Chordeiles virginianus.** NIGHTHAWK.—An abundant species throughout this region. Two heavily incubated eggs were found July 17 on a rocky ridge near Cobalt Lake.

24. **Chætura pelagica.** CHIMNEY SWIFT.—Abundant about the lakes. Many seen in Haileybury where they nest in chimneys.

25. **Trochilus colubris.** RUBY-THROATED HUMMINGBIRD.—Only noted once, July 19, near Sasaginaga Lake.

26. **Tyrannus tyrannus.** KINGBIRD.—Fairly abundant about the lakes and along the creeks. Young birds seen late in July.

27. **Nuttallornis borealis.** OLIVE-SIDED FLYCATCHER.—One specimen was secured August 8. A few single individuals were met with previous to this date.

28. **Contopus virens.** WOOD PEWEE.—Although but few were observed, we heard them quite frequently.

29. **Empidonax flaviventris.** YELLOW-BELLIED FLYCATCHER.—Two of this species were met with July 29, being the only ones seen.

30. **Empidonax minimus.** LEAST FLYCATCHER.—One adult male taken August 7.

31. **Cyanocitta cristata.** BLUE JAY.—Fairly common; observed every day.

32. **Perisoreus canadensis.** CANADA JAY.—This bird was not met with during July or August. Kay found it common after the middle of September.

33. **Corvus corax principalis.** NORTHERN RAVEN.—Fairly common.

34. *Corvus brachyrhynchos*. AMERICAN CROW.— Abundant.
35. *Agelaius phoeniceus*. RED-WINGED BLACKBIRD.— Three observed in a marsh near Cross Lake, August 6. Although the same marsh was visited several times later, we did not see them again.
36. *Euphagus carolinus*. RUSTY BLACKBIRD.— One pair observed at Short Lake. We visited the same lake later several times and on each occasion both birds were seen flying back and forth along the shore carrying food. They were undoubtedly feeding young.
37. *Quiscalus quiscula æneus*. BRONZED GRACKLE.— Fairly abundant.
38. *Carpodacus purpureus*. PURPLE FINCH.— One pair met with in Cobalt, July 15.
39. *Loxia curvirostra minor*. AMERICAN CROSSBILL.— Many large flocks met with. While walking up the railroad from Cobalt one day, a large flock alighted on the trees about us. They showed absolutely no fear, one bird attempting to alight on the end of a canoe paddle which I was carrying over my shoulder, and on the same occasion several flew by within two or three feet of us.
40. *Astragalinus tristis*. AMERICAN GOLDFINCH.— Regularly met with about the partially cleared sections.
41. *Poœcetes gramineus*. VESPER SPARROW.— Only one seen, July 30, in a small clearing near Haileybury.
42. *Zonotrichia leucophrys*. WHITE-CROWNED SPARROW.— A few single individuals noted. Seen feeding young, July 17.
43. *Zonotrichia albicollis*. WHITE-THROATED SPARROW.— Probably the commonest bird in this region. Eggs and young observed.
44. *Spizella socialis*. CHIPPING SPARROW.— Only one met with, August 4.
45. *Junco hyemalis*. SLATE-COLORED JUNCO.— Abundant. Breeds. Eggs and young observed.
46. *Melospiza cinerea melodia*. SONG SPARROW.— Regularly met with about the clearings.
47. *Petrochelidon lunifrons*. CLIFF SWALLOW.— Found only at North Temiskaming, where they are quite common.
48. *Hirundo erythrogastra*. BARN SWALLOW.— Common at Haileybury. Breeds.
49. *Iridoprocne bicolor*. TREE SWALLOW.— Regularly met with about the various lakes.
50. *Ampelis cedrorum*. CEDAR WAXWING.— Generally distributed.
51. *Vireo solitarius*. BLUE-HEADED VIREO.— Only one met with, July 15.
52. *Mniotilta varia*. BLACK AND WHITE WARBLER.— Once met with, August 7.
53. *Helminthophila ruficapilla*. NASHVILLE WARBLER.— Only one met with, August 12.
54. *Compsothlypis americana usneæ*. PARULA WARBLER.— Three recorded, two August 5 and one August 11.

55. *Dendroica tigrina*. CAPE MAY WARBLER.— One adult male met with August 12.
56. *Dendroica æstiva*. YELLOW WARBLER.— Four single individuals met with the latter part of July.
57. *Dendroica cærulescens*. BLACK-THROATED BLUE WARBLER.— Fairly common during the latter part of July, more so in August.
58. *Dendroica blackburniæ*. BLACKBURNIAN WARBLER.— Several met with. Observed feeding young, July 7.
59. *Dendroica maculosa*. MAGNOLIA WARBLER.— Only met with once, July 24.
60. *Dendroica virens*. BLACK-THROATED GREEN WARBLER.— Once met with, July 26.
61. *Dendroica vigorsii*. PINE WARBLER.— Several met with during the early part of our stay.
62. *Seiurus aurocapillus*. OVEN-BIRD.— Four single individuals met with during the latter part of July. Not seen later than August 1.
63. *Seiurus noveboracensis*. WATER THRUSH.— But one observed, August 2.
64. *Geothlypis trichas brachidactyla*. NORTHERN YELLOW-THROAT.— Once met with, July 19.
65. *Wilsonia canadensis*. CANADIAN WARBLER.— Very abundant. Breeds.
66. *Setophaga ruticilla*. AMERICAN REDSTART.— Three single individuals met with, July 18, July 23, August 7.
67. *Troglodytes ædon*. HOUSE WREN.— Twice met with, August 4.
68. *Cistothorus palustris*. LONG-BILLED MARSH WREN.— Met with several times on a marsh near Cross Lake. Undoubtedly the same pair observed each time.
69. *Certhia familiaris americana*. BROWN CREEPER.— Very abundant everywhere.
70. *Sitta canadensis*. RED-BREASTED NUTHATCH.— Fairly common.
71. *Parus atricapillus*. CHICKADEE.— Very abundant everywhere.
72. *Regulus satrapa*. GOLDEN-CROWNED KINGLET.— Fairly common. Observed feeding young, July 28.
73. *Turdus fuscescens*. WILSON'S THRUSH.— Several single individuals observed.
74. *Merula migratoria*. AMERICAN ROBIN.— Fairly common about the partially cleared sections.
75. *Sialia sialis*. BLUEBIRD.— Fairly common.
76. *Passer domesticus*. ENGLISH SPARROW.— Very common at Haileybury.

UNPUBLISHED LETTERS OF JOHN JAMES AUDUBON AND SPENCER F. BAIRD.

BY RUTHVEN DEANE.

III.¹

AUDUBON TO BAIRD.

New York, Nov. 29, 1842.

My dear Young Friend,

It seems to me as if an age had already elapsed since I have heard of you or your whereabouts. Neither do I know clearly whether in the way of correspondence, you are in my debt, or I am in yours. Nevertheless I now write to you, and request you to read this letter more than once, and think deeply on the purport of its contents that you may be the [more] able to form a true Idea of what I intend to say [to] you, and for yourself to give me a true answer, and on which I can depend, no matter whether it is to my liking or not.

It is now determined that I shall go towards the Rocky Mountains at least to the Yellowstone River, and up the latter Stream four hundred of miles, and *perhaps* go across the Rocky Mountains. I have it in my power to proceed to the Yellowstone by Steamer from St. Louis on the 1st day of April next; or to go to the "*Mountains of the Wind*" in the very heart and bosom of the Rocky Mountains in the company of Sir William Drummond Stewart,² Baronet who will leave on the 1st of May next also from St. Louis.

It has occurred to me that perchance you would like to spare a few months of your life, to visit the great Western Wilderness, and perhaps again prefer going in my Company in preference to that of any other person? Of this of course I cannot Judge without your answer to this. I thought that you would have been in New York long ere this, but not a Word of you has reached any friend of yours here for several months. I have had an abundance of applications from different sections of the country, from Young

¹ For Parts I and II see Auk, Vol. XXIII, 1906, pp. 194-209 and 318-334.

² William Drummond Stewart (7th Bart.); born 1795, died 1871.

Gents who proffer much efficiency, etc., but I do not know them as I know you, and if the terms which I am about to propose to you will answer your own views, I wish you to write to me at once so that I may know how to prepare myself for such a Journey, and under such circumstances.

Would you like to go with me at any rate? By which I mean, whether by Land, or by Water, and undertake, besides acting towards me as a friend, to prepare whatever skins of Birds or Quadrupeds, I may think fit for us to bring home. The Birds, you might have one half as your own, the Quadrupeds, (should you wish it) you might a 4th or every 4th specimen of the same species, reserving to myself all that is new or exceedingly new.

I will procure and furnish *all the materials* for skinning, preparing, and saving whatever we may find in Ornithology and in Mammalia, and in all probability (if you think it absolutely necessary) pay one half your expenses from the time we leave St. Louis until our return to that city. You will have to work hard, of course, but then I trust that the knowledge alone which you must acquire would prove a sufficient compensation, and as you already know me pretty well, I need not say to you that I am not hard on the nigger.

It will be necessary for you to provide a good double barrelled Gun, and an excellent Rifle, Shot bag, powder flask, &c, a good hatchet, and a sufficiency of clothes for something like a 12 month's Campaign. But if you will write to me at once upon the subject, I can give you a more and a better a /c of all my intentions, than is at present necessary.

If all goes on as I trust it will go on, we may be back home by Octr. or Novr. next, 1843.¹

Do not lose a moment in writing to me in answer to this after you have thought *deeply* upon the matter.

Remember me kindly to all your friends, and believe me,

Yours Always,

John J. Audubon.

77 Williams Street, New York.

¹ The Missouri River Expedition occupied the period between March 11, 1843, and November 6 of the same year. Baird did not accompany Audubon. He had corresponded with him four months before on this same subject, as shown in a letter which I published in 'The Auk' (Vol. XXI, April, 1904), stating that nothing would delight him more than to go, if he could afford it.— R. D.

BAIRD TO AUDUBON.

Washington, November 24th, 1843.

My dear Mr. Audubon

It has been with the greatest pleasure that I have heard by the papers of your safe arrival in a civilized part of the country, with your collections in all departments of Natural History.¹ That these have been extensive I can have not the least doubt, as you are not a person to be idle when anything is to be done. From time to time short notices of your whereabouts and doings, appeared in the newspaper and a thousand times I wished that the fears of my friends had not prevented me from accompanying you to the scenes of action. Will you not, if you have time, write & tell me what your success has been, and what new birds & beasts you have discovered? Nothing but vague rumors have reached me of these matters. Is there anything I can do for you here? Will you not be on yourself after the meeting of Congress?. Please enclose anything for me under cover to "Charles B. Penrose,² Solicitor of the Treasury, Washington."

Yours Sincerely

Spencer F. Baird.

John J. Audubon Esq.

BAIRD TO AUDUBON.

Carlisle, March 9th, 1844.

My dear Mr. Audubon

I would have replied ere this to your last two letters, but for waiting for further information respecting the Pennant's Marten. I have at last got a full account of the animal, its price &c. The owner is very unwilling to part with it, having formed the most extravagant ideas of its value and rarity. He has already realized a considerable sum of money by exhibiting it in Harrisburg, and intends making a tour through the neighboring towns for the same purpose. He however said that I might have it for ten dollars, if I would pay for the box he had made to contain it. The box is large, and convenient, having iron bars on one side, & iron fasten-

¹ Missouri River expedition, which occupied the time between March 11 and November 6, 1843.

² Charles B. Penrose of Pennsylvania, Solicitor of the Treasury from 1841 to 1845, appointed to Office by President William H. Harrison.

ings on the other, with a sliding door to shut it up completely. This cost 5 dollars? The man says he has not got the skin of the old one but will try and get it, he thinks he can do so, when he will let me have it with the live one. If therefor you conclude you want the Marten, please to send me the 15 dollars which can be done in a letter. I had hoped to have been able to have purchased it and presented it to you; but the price is far above my present means having used up all my "spare change" during an expensive three months absence from home. I can send it very safely to Philadelphia, as I have a very obliging acquaintance among the forwarding merchants here, who goes down himself twice every week, and who would take great pleasure in feeding the animal on the road and delivering it safely at Hall Brothers. I have some skins collected here which are at your service. They are *Sciurus Cinereus*?¹ ferruginous above & black beneath, *Lepus Sylvaticus*,² & a very rough specimen of *Hystrix dorsata*³ caught in Clearfield Co. Penn. I do not notice in your list of birds to be published in your supplement the *Turdus Minor* of Gm.⁴ indicated in Fauna Bor. Am. It is certainly a well characterised species and abundant in our mountains in spring. It comes with Wilson's thrush but in a tenfold number. I can send you very good specimens if you wish them. How are your new birds to be published and if in the small edition, can they be bought separately. You ask whether I shall be in New York before you go to Boston. I shall not leave Carlisle for several months. It is exceedingly probable that I shall go on a long threatened trip to the coal regions of Schuylkill Co. this summer. If I do I hope to render you some tangible evidence of my having been there in the shape of specimens and notes. Hoping to hear from you soon I remain

Yours Sincerely

Spencer F. Baird.

John J. Audubon Esq.
77 William St.
New York.

¹ *Sciurus niger* Linn.

² *Lepus floridanus mallurus* Thomas.

³ *Erethizon dorsatum* Linn.

⁴ *Turdus fuscescens*: In the early days "mix up" on the genus *Turdus*, "Swainson called it *T. minor* after Gmelin, and applies the name *wilsonii* erroneously to *T. swainsonii*." (Bds. N. A.)

BAIRD TO AUDUBON.*

Carlisle March 16, 1844.

My dear Mr. Audubon.

I have the Pennant's Marten¹ safely in my possession having just returned from Harrisburg with it, whither I had gone for the purpose of procuring it. It seems in very good health, and is without exception the most unmitigatedly savage beast I ever saw. The Royal Bengal Tiger, or the Laughing Hyena are neither of them circumstances to it. It goes through all the motions of a mad cat, particularly when a dog comes near, — spitting, hissing, growling etc.

All the account I was able to procure respecting the animal was the following. It was found in company with an older one, in Peter's mountain, six miles above Harrisburg about five weeks ago. After a most desperate resistance the old one was killed, having beaten off a large pack of dogs, to whose assistance the hunters were obliged to run. This individual ran up a tree, and being stoned by the men, jumped off to a distance of forty feet! when being a little stunned by the leap they ran up quickly and threw their coats over it, and then secured it. The old one measured three feet and a half from nose to end of tail, and was about one third larger than this.

I am looking out for a good chance to send the Marten on to you which I hope will be early next week. There will be cars going on Monday & Tuesday, to Philadelphia, but on Wednesday a man goes down with his own car to whom I can entrust it safely to feed and water.

I will send on a few other skins I have here with the Marten. A small shrew from Cape May, Squirrel, etc. If they leave on Wednesday they will arrive on Thursday evening it taking two

¹ In the 'Viviparous Quadrupeds of North America,' under the article on Pennant's Marten, Audubon writes: "The specimen from which the figure of our plate was drawn, was taken alive in some part of the Alleghany Mountains, in the State of Pennsylvania, and we soon afterwards received a letter from our esteemed friend, Spencer F. Baird Esq., of Carlisle, in that State, informing us of its having been captured, which enabled us, through that gentleman, to purchase it. His letter was dated March 16, 1844."

days to go. I will send a notice of the transmission to Hall Brothers¹ when I send it off.

Yours sincerely

Spencer F. Baird.

John J. Audubon Esq.
77 William St.
New York.

BAIRD TO AUDUBON.

Carlisle August 4th. 1845.

My dear Mr. Audubon

It is with sincerest regret that I see by the papers that your copper plates² were injured or perhaps ruined by the fire which occurred a few weeks ago. Various reports are circulated respecting your loss, and among so many contradictory ones it is difficult to get at the truth of the case. Might I ask you to let me know the truth of the matter. I would have answered your last letter long ago, but was waiting for information respecting the Northern hare, for which I have applied to several persons in different parts of the state. None has come in yet, but I hope to get some before long. The animal is not found in this county & is very rare in the one north of this. In Huntingdon Centre, Clearfield Co. they are more common. I wrote to my friend in Texas about the large prairie hare, & I hope he will be able to render the proper account of it. I called his attention also to the other quadrupeds of the country, and I hope to hear from him soon, & expect that he will

¹ Hall Bros., Merchants and Importers, 43 Beaver St., New York.

² The copper-plates, engraved by Robert Havell, for the folio edition of 'Birds of America,' were stored in a New York warehouse in 1845, where many of them were seriously damaged by fire. Miss M. R. Audubon writes me that in 1851-52, when her grandfather's new house was built, a fireproof vault, detached from the other buildings, was put up for them, and there they remained until after the death of her father in 1862, when they were sold. Two of these plates, in perfect condition, are now in Miss Audubon's home at Salem, N. Y. They represent the Great White Heron and Snow Goose. Six plates, in the Smithsonian Institution at Washington, D. C., represent the Robin, Chuck-wills-widow, Bob-white, Great Blue Heron, Scarlet Ibis, and Whooping Crane. Nine plates, in the American Museum of Natural History, New York City, represent the Canada Goose, Hutchins's Goose, Mallard, Turkey (female), Loon, Snowy Owl, Hawk Owl, Harris's Hawk, and Black-footed Albatross. There are several other plates in private hands at Ansonia, Conn. (R. D.)

remain some time longer. Is there any particular point to which you wish his attention directed. With my best respects to all your kind family I remain

Yours Sincerely

Spencer F. Baird.

P.S.

I forgot to say that I have been elected professor of Natural History in Dickinson College. The situation is entirely nominal however, nothing to do & no salary whatever.

John J. Audubon. F. R. S.
77 William St.
New York.

BAIRD TO AUDUBON.

Carlisle Sept. 26. 1845.

My dear Mr. Audubon

I hasten to communicate to you some information which I have obtained of the Northern hare, although in all probability you are well acquainted with what I have to say. My informant is Mr. Andrew H. Rose of Silver Lake Susquehanna Co. Penn., where game of all kinds is abundant. He is now in Carlisle, and any queries you might make respecting the animal, on subjects not mentioned in his communication, he could answer to your satisfaction. Among the animals in his neighborhood, he speaks of a Catamount!!, a varmint twice as large as the wild cat, tail 18 inches long, and unspotted. i. e. the body. Very different from the young panther, with which he is well acquainted. There was a skin in his neighborhood, which he has written for. He is not very sanguine of getting it, if it is not procurable his brother will try very hard to get another. He promises me skins of Wild Cats, Cross foxes, Fishers, a Red Squirrel, twice as large as a Chickaree, living in deep swamps, and Hares in various plumages. He killed several Silver Foxes, last winter and will try and get one if possible. He says they bring 35 dollars from the dealers in Montrose. If I should be so fortunate as to get anything interesting through him it shall be sent on immediately, as my sole object in

collecting quadrupeds is to put them into your hands. I have been thinking very seriously of going to Texas this winter for some months, and possibly nothing but the want of money will prevent me. An acquaintance is anxious for me to pay his uncle a visit, who resides in summer on Galveston Bay, in winter about 100 miles along on Trinity River. I shall keep a sharp lookout for quadrupeds if I go. Please present my best respects to your family, and believe me as ever

Yours Most Sincerely

Spencer F. Baird.

Memoranda of the Nat. Hist. of *Lepus americanus*, Erx.

In cold weather found in Lustral swamps. Never seen in large open woods, nor in extensive clearings. In summer in bushy places near clover patches, in the edges of which they have their nests. Young from three to five, gray. Nest sometimes under a log, made of leaves and some fur. Feed on clover in summer, on bark of birch, beech, wild poplar, and striped maple. Change in November, and April. Two very rarely seen together. Caught in snows in great quantity, during winter, and sent to New York. Worth from 8 to 10 cents in Susquehanna Co. Favorite time of running is on moonlight nights. Never burrow. Run very rapidly, leaping from 5 to 8 feet or even more when pursued, more faster than Foxhound, but are caught by Grey-hounds. Have favorite paths for crossing over roads, or from one patch of woods to another. In winter they form a beaten track six or more inches in the snow. When pursued by hounds they soon double and come back to place from which they started. When chased they will often mount up on a small knoll in woods, and listen and watch for their pursuers. If whistled at when running, they will stop for an instant. Preyed on by Wild Cats, Foxes, Weasels, Hawks, Eagles, Owls &c. Foxes have been known to hunt them in pairs, one chasing, the other watching near a crossing place. Very abundant, 10 to 50 may be seen in a day. Common rabbit very rare, their existence traditionary.

BAIRD TO AUDUBON.

Carlisle Dec. 29, 1845.

My dearest Mr. Audubon

It is with no ordinary feeling of pleasure that I received your kind Christmas gift in the shape of a letter written on the 25th, than which, few things in this world could have pleased me more. I would have answered the preceeding one long before, had I not been waiting for something to write in answer to your queries. As to procuring a specimen of the Catamount and Black Fox in the flesh, it is an exceedingly difficult matter. I however will do what I can. Of course none are to be procured in this vicinity. I however write today to Mr. Andrew Rose of Silver Lake Susquehanna Co. Pa., who is now at home, for the purpose of inducing him to make every effort to procure one or both animals. He has several times spoken to me of the black fox as being occasionally captured in his vicinity and when he went up home a few weeks ago, promised to get me one if possible. He, I have no doubt, will make every effort to get it, as well as the other, if it really has a veritable existence. My friend Charles Churchill son of Col. Churchill wrote to a friend of his in Burlington, Vt. for a similar purpose, whether one could be procured in the flesh and on what terms, also to collect every information respecting the habits and manners of the Fisher &c. You ask me how I have been employing my time. I have been occupied this winter principally in studying modern languages, German, Spanish and Italian in which I hope I made some progress. Besides this I draw a little every day, principally sketches of boxes, tubs, boats, castles &c. not from nature. My principal object is to be able to copy off some of the beautiful landscapes which I am constantly meeting with in my walks. I visited a spot last summer about 18 miles from Carlisle, whence a surface of about 1500 square miles of cultivated valley was visible at one glance.

A line of very near 100 miles could be traced in the length of the valley. The rest of my time is occupied by mathematics general reading & visiting a young lady. I have been for some time studying out our little flycatchers, and have come pretty nearly to the conclusion that my *Tyrannula minima* is very like Swainson's *T.*

pusilla. His figure and description are different from my bird, but both are vague enough to allow of considerable latitude of interpretation. I can only decide the matter by looking at your plate of *pusilla*. Do you still think that *Tyrannula richardsonii* is a good species? In about 20 specimens of *T. fusca* which I possess, there is every gradation in size, color, & proportion of quills between the descriptions of *Fusca* and *richardsonii*. If there is any infallible distinctive character, please mention it to me. The eggs and habits appear at any rate to be very different from their descriptions.

If I have time I will write out a monograph of our Flycatchers for the Proceedings of the Academy of Nat. Sciences, for the purpose of giving the correct names of Giraud's Texan species.¹ [His] *Muscicapa Texensis* for instance is nothing but the old *M. cayanensis* of Brisson² & Gmelin, *M. flava* of Vieillot,³ and so of others. If my purse is deep enough towards the end of the winter, I may possibly be able to meet you & talk over these matters. In the mean time Believe me to be, with my respects to Mrs. A. and all your family

Yours most affectionately

Spencer F. Baird.

John J. Audubon Esq.
77 William St.
New York.

BAIRD TO AUDUBON.

Carlisle Feb. 4th, 1846.

My dear Mr. Audubon

I am sorry to be obliged to report such ill success in getting the animals you wished, although I have done everything in my power. My friend who went to Susquehanna Co. returned without anything more than a box of Salmon trout and a few *Lepus americanus*, which are so abundant. By the way I do not want you to consider

¹ 'A Description of Sixteen New Species of North American Birds.' 1841. *Muscicapa texensis*, folio 5. pl. 1.

² 'Ornithologia sive Synopsis Methodica.' 1760. *Muscicapa cayanensis*, Vol. II, p. 404.

³ 'Histoire Naturelle des Oiseaux de l'Amerique Septentrionale' 1807. *Muscicapa flava*, pl. 41.

the account of the habits of this hare, which I obtained from him and sent to you, as gospel. I have since that time discovered that he occasionally invents stories about animals in lack of true bills. So you may only believe what you please & think probable. He says that the catamounts skin was not to be found anywhere, and it seems that his black or silver foxes are cross foxes.

My friend Charles Churchill wrote to a gentleman in Burlington named Henry Loomis¹ who has been in the fur business, for information respecting foxes. He says that it would be impossible to procure one in Vermont in the flesh, but that it might be done through the Quebec agents of the Hudson's bay fur Co., or in Maine. It would cost a great deal however. He has paid from 9 to 35 dollars for skins. Mr. Thompson in his *Gazetteer*² of Vermont speaks of those in Mr. Loomis' possession. This gentleman refers to the copious accounts of the different foxes, martens &c. in Thompson's *Gazetteer* of Vermont, as well worthy of credit, as he contributed many of them from personal knowledge. He added one fact which Thompson has omitted, viz. with respect to the *Mustela Pennantii* it being a source of great injury to the Pine Marten Hunters.

One has been known to follow the line of traps for miles, partially eating the captured Martens, thereby damaging or entirely destroying the skins. They have a very disagreeable odor when improperly skinned, worse than that of the mink. They frequently spring the Marten traps, and then eat the bait, being to cunning to enter them before, so say the hunters. I have spoken and written to several other persons for various information which I will communicate as soon as it arrives. A friend is now in Erie Co. where I hope he will learn something. With my best respects to all your kind family, and congratulations to Victor³ I remain

Ever yours affectionately

Spencer F. Baird.

¹ A native of Burlington, Vt., born Aug. 31, 1818; died Dec. 18, 1886. Mr. Chas. E. Allen of Burlington, Vt., writes me that Mr. Loomis was a much respected citizen, entered into business before he was of age, and was an earnest and active promoter of the welfare of his native town, officiating as Trustee of the University of Vermont and President of the Burlington Savings Bank for thirty years. (R. D.)

² A *Gazetteer* of the State of Vermont, 1824, by Zadock Thompson, born May 23, 1796, died 1856.

³ Victor Gifford Audubon.

BAIRD TO AUDUBON.

Carlisle Feb. 26th, 1846.

My dear Mr. Audubon.

Coming through Harrisburg last Saturday on my way home after a three months absence, I heard that there was a "curious varmint" to be seen by the curious on payment of a "levy" in good money. I hastened thither and having with some effort fished out the coin from a collection of miscellanea existing in my breeches pocket, I tendered it, and, it on examination proving to be genuine, I was admitted to a sight of his highness. It proved to be a fine specimen of Pennant's Marten. It had been caught a few weeks ago, about ten miles above Harrisburg, in company with its mother who was despatched by the dogs, after making a most desperate resistance. The old one was said to have been about the size of a pointer dog. The young one is as large nearly as the *Lepus Americanus*. It is very savage, and emits a rather strong musky odor. It had been my intention to get it and send it on to you, but on inquiry, the price somewhat dampened my arder. Ten dollars was what the owners said that they had given for it, and they expected an additional sum to repay them for the trouble it had cost them. How are you off for these critters? & what shall be done about it.

Will you not be a little surprised, as I was, to hear of my having procured a fine adult specimen of *Lestris Pomarinus*,¹ shot a few years ago in summer or fall at Harrisburg. There is not the slightest question as to its having really been shot there, and in addition I am assured that their occurrence there is not rare. I was told some time ago of "gulls" of a dark color had been seen resting on the water with very long tails, but this I always set down as rather apocryphal. Facts and specimens however are stubborn things.

How do you come on with your figuring of new species of Birds. I have never yet been able to learn what your species procured last summer were.

¹ There is a specimen in the Baird collection at the Smithsonian Institution, Cat. No. 1275, labelled "Harrisburg, summer of 1839, Dr. John Fager." Dr. John Henry Fager was one of the first physicians of Harrisburg, Pa., and also much interested in birds and flowers, born May 31, 1805, died Aug. 18, 1872.

I have made drawings of the skulls of several of our quadrupeds which are at your service if you want them. They are Mink, Wild Cat, Ground Hog, *Lepus Sylvaticus*,¹ *Neotoma Floridana* and others. I have got a Camera Lucida now and intend trying to draw with it. Anything I can do in this way for you will be cheerfully done.

Yours Sincerely

Spencer F. Baird.

John J. Audubon Esq.
77 William St.
New York.

BAIRD TO AUDUBON.

Carlisle Nov. 4, 1846.

Dear Mr. Audubon

I have been intending to write for a long time, to find out how you all are at Minnie's Landing,² and how yourself is particularly, but have put it off from time to time for various reasons. I can do so no longer, but must beg you to let me know these particulars.

Since my last visit to you, two pretty important events have happened to me. The first was getting married,³ the second, settling down steadily in my Professional chair.⁴ My wife is the only daughter of Col. Churchill⁵ Inspector Gen. of the Army, now with Gen. Wool⁶ in Mexico. She suits me exactly, being as fond

¹ *Lepus floridanus mallurus* Thomas.

² "Minniesland," now known as Audubon Park, in the present limits of New York City. "The name came from the fact that my father and uncle always used the Scotch name 'Minnie' for mother. The land when bought was deeded to her, and always spoken of as Minnie's land." (See Audubon and his Journals, Vol. I, p. 71.)

³ The following is taken from a file of Carlisle, Pa., papers: "Married: Aug. 8, 1846, in Carlisle, by the Rev. John McClintock, Prof. Spencer F. Baird of Dickinson College, to Mary Helen Churchill, daughter of Col. S. Churchill, Inspector General U. S. Army."

⁴ "In 1845 he was chosen professor of natural history in Dickinson College, and in 1846, his duties and emoluments were increased by election to the chair of natural history and chemistry in the same institution." In 1846 there were about one hundred students in Dickinson College. There was under the immediate supervision of the college faculty a preparatory department or "Grammar School," as it was called, with about half that number of students.

⁵ Col. Sylvester Churchill, born about 1783, died Dec. 1862. Became Inspector General of the Army in 1841.

⁶ General John E. Wool, American General, born about 1789, died about 1869.

of birds & snakes & fishes etc. as myself. I have even given her a lesson or two in taxidermy.

My duties as professor consist in teaching Animal Physiology, Natural Theology & Mathematics. My salary is small \$400 but I hope will be larger hereafter. I have to work hard, but that is good for me.

Please to let me know how the quadrupeds get along. Is the first vol. published? How does John¹ get along in England? What became of his Texas birds?

Please to tell me the address of your friend Ayres.² I have been collecting fishes for some weeks, and wish to correspond & exchange with him on this subject. I can send him a good many species.

Please give my love to all your kind family. My wife (to whom two years ago I gave a picture of yourself, as the most acceptable present) sends hers also, and desires exceedingly to see one to whom her husband owes so many obligations of every kind. Believe me to be ever

Yours most affectionately

Spencer F. Baird.

AUDUBON TO BAIRD.

Minniesland.

Nov. 8th, 1846.

My dear Friend,

We were very happy to hear of your Success in obtaining a Professorship. I wish you had been more minute as to the amount of your Salary as I consider 400\$ as a very small sum. If you have not a house, fuel, and furniture, &c &c &c to compensate for so small a sum, and having so much to perform for it. We are all glad that you have a good helpmate in the shape of a wife, and we would be very glad to have you under our roof, even now; but as the winter is now fast approaching we hope to see you certainly some time next spring, or during the summer, as you know that then our place is worthy to reside at. The fishing is then Capital.

¹ John Woodhouse Audubon.

² W. O. Ayres, Sag Harbor, Long Island, N. Y., for whom Audubon named *Colaptes ayresii*, Birds of America, Vol. VII, 1843. *Colaptes hybridus* of Baird.

The residence of our Friend, W. O. Ayers, is on Long Island, and I think that a letter addressed to him at Sag-Harbor, will be sure to be received by that good Friend of ours.

He will be glad to receive the collection of fishes which you have procured for him, and I know will be most happy to exchange for other fishes or subjects if you should desire any at his hands. Please to give your Dear Lady our best love, and congratulations on her having such a capitally perfect husband. We are all well at present. I have not done anything with the Birds which, indeed, my son Victor has sent to the Academy of Philadelphia. I suppose I need not look any more for a Black Fox in the flesh from you during the next winter.

Consider me always my Dear Friend,

Your most sincerely attached,

John J. Audubon.

Should you procure a black fox, be sure to forward him uncut to our office New York 78 John Street. Adieu, and God bless both you and your Dear Wife.

This is a mistake, I brought them back. V. G. A.

The letter press ¹ will be ready in a few days. I will forward a Copy to you to Philada. from whence you can no doubt easily get it. I will join my Father, dear Mr. Baird, in congratulations, and in sincere wishes for your happiness & welfare.

Yours faithfully,

V. G. Audubon.

BAIRD TO VICTOR G. AUDUBON.

Carlisle Jan. 19, 1847.

My dear Victor

I have been trying for some time past to find time for writing and thanking you all for the copy of the Viviparous text. Never had mortal man such a feast as I in turning over the pages and reading the interesting and copious accounts of the habits of animals, many of which were unknown to me beyond the name. I was

¹ 'The Viviparous Quadrupeds of North America,' by John James Audubon and the Rev. John Bachman, D. D. &c. &c. Vol. I, Published by J. J. Audubon, 1846; Vols. II and III, published by V. G. Audubon, 1854.

exceedingly gratified by the kind terms I found myself mentioned throughout the book, more so than I deserve. Be assured that no effort of mine however humble shall be spared to assist in the perfecting a labor so stupendous and important as that in which you are engaged. Would that I could be of more substantial help by sending half a dozen subscribers, I may do so yet, who knows. I found it impossible to get for you a copy of the Berlin transactions containing the elucidations of Hernandez.¹ By the by the volume must be in the Library of the Lyceum, as if I remember aright, it was there I first saw it? If the book remain still unprocurable, I would advise you to import the volume, or the Physical part of the volume. Wiley and Putnam or Radde could do this in six or eight weeks at an expense of not more than about 2.00. I do not remember now whether the vol. was printed in 1827 or whether it contained the proceedings for 1827. In the latter case it could have been printed a year or two later. I have been looking over the Texan birds and find the curved bill Thrush-like bird, and the small spotted woodpecker undescribed, unless it may be in a paper by Cabot on Yucatan birds. It is very different from the bird described by Gambel as *Picus Nuttalli*² from California. I hope to get at them systematically in a few days and see what I can discover about them. I found the other day a dead specimen of a large shrew which seemed referable to *Sorex DeKayi*.³ I put it in spirits at your service. I have been making various skeletons & getting various books for the purpose of studying out the comparative anatomy of our animals. Anything that I may do or learn about American Quadrupeds will be at your service. All your queries respecting animals in your letter of the 26th shall be carefully attended to. I send you some extracts I made from the "Zoology of the Sulphur"⁴ a copy of which belonging to Dr. Wilson⁵ I found at the Academy. There are plates of

¹ Francisco Hernandez, a Spanish physician and naturalist, born Toledo, Spain, 1530, died Madrid, Spain, Jan. 28, 1587.

² *Dryobates nuttalli*.

³ *Blarina brevicauda* Say.

⁴ 'The Zoology of H. M. S. Sulphur,' under Capt. Sir Edward Belcher, during the years 1836-42. London, 1844.

⁵ Thomas Bellerby Wilson, one of the founders of the Philadelphia Academy of Natural Sciences in 1812. He presented the Academy with 12,000 books and pamphlets, and with his brother Edward, 26,000 specimens of birds. Born Jan. 17, 1807, died March 15, 1865.

most of the species. Gambel has a specimen of weasel which is intermediate between *Mustela frenata* Licht. and *M. xanthogenys* of Gray in the present extracts. Have you heard lately from John,¹ how does he get along, and when does he return. With my best respects to your father and whole family I remain

Yours as ever

Spencer F. Baird.

BAIRD TO AUDUBON.

Carlisle, Feb. 8, 1847.

My dear Mr. Audubon

Very much to my astonishment I received last Saturday a letter from Mr. Dana² saying that he had written to Dr. Pickering³ that I would make a good curator of the Smithsonian institute, and advising me if I wished the place to write immediately to Prof. Henry⁴ and enclose my credentials. Now I would like the situation amazingly and write to ask you to make out a flaming recommendation for the place & send me as soon as possible. Say what you please about qualification &c. I would be obliged to you for the exertion of any personal influence you may have on the board of Regents. When there I would hope to be materially useful to you in your labors. I do not think that I replied to your query whether Peale⁵ had published any of the quadrupeds of the exped. or in particular any deer. To the best of my knowledge he has not. Drawings of many species have been made, but nothing published. In an article by Count Castelnau⁶ on his South American travels in the *Comptes Rendus* Vol. 22. No. 23, June 1846, he says that there exists a remarkable difference between the young of the

¹ John Woodhouse Audubon, who was then in Europe with his family, devoting his time to painting pictures for the 'Quadrupeds.'

² James Dwight Dana, Geologist and Mineralogist. Born Feb. 12, 1813, died April 14, 1895.

³ Dr. Charles Pickering, Naturalist of the U. S. Exploring Expedition, under Capt. Charles Wilkes, in 1838-42. Born Nov. 10, 1805, died March 17, 1878.

⁴ Prof. Joseph Henry, elected first Secretary of the Smithsonian Institution Dec. 3, 1846. Born Dec. 17, 1799, died May 13, 1878.

⁵ Titian R. Peale. Accompanied several exploring expeditions as naturalist. Born 1800, died March 13, 1885.

⁶ Francis de Castelnau, who travelled extensively in South America. Born in London, England, 1812; died in Melbourne, Australia, 1880.

Couger, *Felis concolor*, in North and South America, it being spotted in the former, and *unspotted* or uniform in the latter!! With my best respects to all your kind family Believe me

Yours affectionately

Spencer F. Baird.

BAIRD TO AUDUBON.

Carlisle April 24, 1847.

My dear Mr. Audubon

I received today from Perry County a fine specimen living of a Red Fox. If you want him let me know *immediately* and I will send him on *immediately*. As we have a station of the Phila. & Pittsburg telegraph in Carlisle you might send word by that means, & thus save several days. I hope to get some good quadrupeds this season as I have made extensive arrangements for gathering the small animals. I hope to spend our vacation this summer near Westport N. Y. at the lower end of Lake Champlain, with my wife's uncle Mr. Guy Hunter. He lives in the midst of an unbroken forest and beasts are abundant. I could get you a black fox, either in skin or possibly alive or freshly killed from there. Do you want one now? Weasels, Fishers &c. are plenty there. My wife and I expect to go up about the middle of July. Please present my best respects & love to your family.

Yours affectionately

S. F. Baird.

BIRDS OF TORONTO, CANADA.

BY JAMES H. FLEMING.

*Part II, Land Birds.*¹

114. ***Colinus virginianus***. BOB-WHITE.—The Quail was at one time found along the north shore of Lake Ontario, certainly as far east as Port Hope (62 miles east of Toronto). Of this species the late Hon. G. W. Allen said, in 1853, "The Quail is still occasionally heard uttering its plaintive cry in autumn and winter, about our woods and fields. In former days large coveys used to remain in the stubble fields and about our barnyards, from October to March."² I doubt if any Quail of pure blood are left east of Lake Erie; those I have examined recently from Oakville (19 miles east of Toronto), are the descendents of imported birds and differ from the indigenous species.

115. ***Bonasa umbellus togata***. CANADIAN RUFFED GROUSE.—Resident; formerly abundant, now not common; nest May 23, 1893. I have put our bird under this somewhat unsatisfactory form; the bird occurring north at least to Lake Nipissing is the same.

116. ***Lagopus lagopus***. WILLOW PTARMIGAN.—A specimen taken May 15, 1897, about four miles from Whitby (29 miles east of Toronto), is in the collection of Mr. J. H. Ames;³ there is no question about the locality being authentic. An unusually southern migration of Willow Ptarmigan took place in the winter of 1896-97, and I recorded them as far south as Lake Nipissing.⁴ Dr. Wm. Brodie remembers a specimen that was taken many years ago in the township of Whitchurch. Ptarmigan are referred to as frequent migrants into the townships back of Darlington (about 40 miles east of Toronto).⁵

117. ***Ectopistes migratorius***. PASSENGER PIGEON.—Once a regular summer resident, breeding in the country between Toronto and Lake Simcoe. The disappearance of the great flocks dates back at least forty years, and by 1880 the bird was rare here; the records for 1890 are May 12, adult male; September 20 and October 11, young females; earliest record, April 13, 1891, male; birds were seen on May 16 and July 6, 1900.⁶ These are the last and are reliable; there is no question that the Wild Pigeon is extinct in a wild state in America to-day.

¹ For Part I, Water Birds, see Vol. XXIII, Oct., 1905, pp. 437-453.

² Canadian Journal, 1853, I, 171.

³ Auk, XIV, 1897, 411.

⁴ Auk, XVIII, 1901, 37.

⁵ Early Settlers of Bowmanville, etc. J. T. Coleman, Bowmanville, 1875, 35.

⁶ Auk, XX, 1903, 66.

An item in one of the early Toronto papers, dated April 15, 1815, "Immense flights of the Wild Pigeon from west to east on the 27 ulto." is the earliest date of arrival I can find.

118. **Zenaidura macroura.** MOURNING DOVE.—Regular summer resident, never very common, May 16 to July 24; my data are insufficient but the dates of arrival and departure are probably April and October; nest June 3, 1899.

119. **Cathartes aura.** TURKEY VULTURE.—Accidental. One was killed in the township of Pickering (about 30 miles east of Toronto), in 1887.

120. **Circus hudsonius.** MARSH HAWK.—Regular summer resident, April 2 to October 21; earliest March 20, 1895, adult male; the young are abundant from September 1 to early October. A male taken May 28, 1895, is in changing plumage, very worn; latest record December 10, 1902. Breeds in Ashbridge's Bay.

121. **Accipiter velox.** SHARP-SHINNED HAWK.—Resident from September 1 to May 14, and probably through the year; young birds September 4 to May 14; mature birds are not common, March 10 to October 7. Breeds very rarely. I have seen one set of eggs taken here.

122. **Accipiter cooperii.** COOPER'S HAWK.—Rare migrant; mature birds from August 10 to October 4; young bird September 24, 1895.

123. **Accipiter atricapillus.** AMERICAN GOSHAWK.—Regular fall migrant, October 2 to November 3; a few remain through the winter, leaving towards the end of March; earliest record August 24, 1899. Mature birds in full plumage were practically unknown till the great migration of 1896 when they became abundant, the young being almost entirely absent. The migration reached Toronto on October 26, and from then till December 20, very many birds were taken. I examined thirty-five local specimens, all in full plumage, and this was not by any means all that were taken. A few adults were noted the three following years, but none have been reported since December, 1899; the number of young birds since then has been normal.

124. **Buteo borealis.** RED-TAILED HAWK.—Common fall migrant; adults October 26 to November 20; young September 23 to November 29. I have no spring records, but have eggs said to be of this species taken here.

125. **Buteo borealis calurus.** WESTERN RED-TAIL.—One record, a male taken November 4, 1895, by Mr. J. Hughes Samuel.

126. **Buteo lineatus.** RED-SHOULDERED HAWK.—Resident; has not been common of recent years; adults from October 1 to May 22; nests from April 1 to 15.

127. **Buteo swainsoni.** SWAINSON'S HAWK.—Rare migrant; no records previous to 1890; a female taken May 22, 1894, is almost black; one taken September 5, 1890, is black, the breast mottled with buffy yellow. These are in my collection and I have seen two more local specimens.

128. **Buteo platypterus.** BROAD-WINGED HAWK.— Regular migrant; mature birds are rare, May 21 to June 30; young are abundant in the fall, August 23 to October 1.

129. **Archibuteo lagopus sancti-johannis.** AMERICAN ROUGH-LEGGED HAWK.— Regular winter migrant, sometimes abundant. An immense flight occurred in October, 1895; from the 26th to the 29th, the birds were taken in dozens; I must have had over fifty brought to me in that time. They were here in decreasing numbers till December 5; between these dates I examined seven in the black phase of plumage. A female taken August 25, 1894, is in changing plumage. A few birds remain through January and February; latest, March 12, 1902.

130. **Aquila chrysaetos.** GOLDEN EAGLE.— Rare migrant; one taken October 24, 1896, one (a female) October 24, 1903, and one on December 15, 1904. There is but one record previous to 1896, but the species is resident in Frontenac County (north of the eastern end of Lake Ontario).

131. **Haliaeetus leucocephalus alascanus.** NORTHERN BALD EAGLE.— Migrant and rare winter resident, October 24 to April 6; young birds are not uncommon. A series of males is not available for measurement, but a series of females is given below.

Sex	Length	Extent	Wing	Tail	Cul- men	Dep. of Bill	Date	Locality
♀ ad.	× 34.75	× 88.25	× 24.50	11.90	2.80	1.45	Dec. 20, 1897	Dunchurch, Ont.
♀ juv.	× 34.25	× 83.	× 24.	12.20	2.45	1.35	Jan. —, 1890	" "
♀	× 33.	× 84.	× 23.	—	—	—	Mch. 23, 1893	" "
♀ juv.	—	—	25.75	12.61	2.55	1.50	Mch. —, 1898	Loring, Ont.

Measurements in inches; × from fresh birds.

132. **Falco islandus.**¹ WHITE GYRFALCON.— A female taken November 20, 1905, is the only record; this is a fairly light bird, comparable with specimens from North Greenland. There appears to have been a southern migration of gyrfalcons in Western Europe and North America in 1905.

133. **Falco peregrinus anatum.** DUCK HAWK.— Regular fall migrant, not common; young birds from September 18 to October 20; mature birds are very rare, a female May 23, 1892, and a male September, 1902; a young male in Mr. Maughan's collection, taken June 25, 1894, is light ash color all over.

134. **Falco columbarius.** PIGEON HAWK.— Regular fall migrant, September 1 to December 6; not very common; mature birds are exceedingly rare. Given as a winter resident in 1853.²

135. **Falco sparverius.** AMERICAN SPARROW HAWK.— Summer resi-

¹ *Hierofalco candicans* (Gm.).

² Canadian Journal, I, 1852-3, 169.

dent, April 5 to October 1 (earliest February 10, 1904); common migrant; breeds (May 18, 1892).

136. *Pandion haliaëtus carolinensis*. AMERICAN OSPREY.— Regular migrant, fairly common May (May 10, 1902), and September 1 to 15, and probably later.

137. *Strix pratincta*. AMERICAN BARN OWL.— One record, a male taken September 7, 1899.¹

138. *Asio wilsonianus*. AMERICAN LONG-EARED OWL.— Common fall migrant, October 2 to November 7; rare summer resident; breeds (May 24, 1894).

139. *Asio accipitrinus*. SHORT-EARED OWL.— Regular migrant, March 5 to 15, and probably through April; abundant in the fall, October 3 to December 26, when large flocks sometimes occur. A light phase of plumage occurs very rarely.

140. *Syrnium varium*. BARRED OWL.— Regular winter resident, October 10 to March 19; sometimes abundant (October 1–10, 1902).

141. *Scotiaptex nebulosa*. GREAT GRAY OWL.— Winter migrant of irregular occurrence. The great flight that took place in the winter of 1889–90 is recorded by Mr. Wm. Cross. "I have received twenty-three specimens, and have had them reported from various parts of the Province. One of my acquaintances stationed at Barrie, received twenty-six this season. They began to come into this region in November, and increased in numbers up to February, after which they became very scarce again."² This is the largest flight recorded, but specimens have been taken in December, 1890, January, 1894, January and March, 1895, and January and February, 1896; the visits appear to have ceased after this.

142. *Cryptoglaux tengmalmi richardsoni*. RICHARDSON'S OWL.— Winter migrant, of irregular occurrence, November 8 to April 3; I have examined nine specimens since 1885, but the number taken probably averages one a year.

143. *Cryptoglaux acadica*. SAW-WHET OWL.— Regular winter resident, October 4 to March 3; probably resident, as I have a young bird taken May 15, 1889, and another young one taken in August. A large flight of these owls occurred in the fall of 1889, and in October (12 to 28), 1895.

144. *Otus asio*. SCREECH OWL.— Resident, not uncommon, sometimes abundant in October and November; breeds (April 27, 1890, five eggs, J. Jackson). The red phase of plumage is rare, usually occurring for several years in succession and then disappearing.

145. *Bubo virginianus*. GREAT HORNED OWL.— Winter resident, October 10 to March 30, usually common; a rare summer resident, a nest was taken in Vaughan Township March 25, 1889, and one at Scarboro, April 2, 1897.

¹ Auk, XVII, 1900, 177.

² Transactions of the Canadian Institute, I, 1889–90, 5.

The resident form in Southern Ontario is remarkably constant in color; the plumage is dark in tone, with comparatively little tawny or ochraceous; rufous birds are rare. Among those that visit us in winter there is an endless variation of color; one specimen is ashy gray.

146. *Bubo virginianus subarcticus*. ARCTIC HORNED OWL.—Of recent record here; there are none in old collections. I have examined four well marked birds since 1893; of these two were typical, the others rather more heavily marked, but none approached *occidentalis*, there being comparatively little ochraceous underlying the white.

147. *Bubo virginianus saturatus*. DUSKY HORNED OWL.—Among the horned owls taken here in winter are a few very dark birds, usually of large size and apparently referable to the form *heterocnemis* of Oberholser.

148. *Nyctea nyctea*. SNOWY OWL.—Regular migrant, October to January, sometimes abundant. The years of unusual abundance, as far as known, are 1833, '37, '39, '53, and '62;¹ in more recent times the years are 1884, '88, '89, '96, and 1901. The flight of 1901-02 extended from December to April; a few specimens were taken in May, and one on June 7.²

149. *Surnia ulula caparoch*. AMERICAN HAWK OWL.—Rare winter migrant of irregular occurrence, October 22 to January 10; I have the records of only three specimens since 1889, but there are several previous to this date.

150. *Coccyzus americanus*. YELLOW-BILLED CUCKOO.—Summer resident, not very common, May 28 to August 23; latest date September 21, 1906 (J. H. Ames); breeds (July 1, 1891). This cuckoo was regarded as very rare here till 1889.

151. *Coccyzus erythrophthalmus*. BLACK-BILLED CUCKOO.—Regular summer resident, not uncommon May 15 to August 30; breeds (June 2 and August 12, 1889; July 6 and 20, 1895). Mr. Geo. E. Atkinson records the finding of eggs of this cuckoo in nests of the Wood Pewee and Yellow Warbler at Toronto³ and Dr. C. K. Clarke records several instances of the same thing at Elora, Ont.⁴

152. *Ceryle alcyon*. BELTED KINGFISHER.—Summer resident, common April 1 to October 10; earliest record March 6, 1894 (J. Hughes Samuel); breeds.

153. *Dryobates villosus*. HAIRY WOODPECKER.—Common migrant and rather rare winter resident; my records are all between October 11 and April 4, and it does not appear to breed here. This form is the one occurring in southern Ontario, at least south of Lake Nipissing, and I have not found *leucomelas*.

154. *Dryobates pubescens medianus*. DOWNY WOODPECKER.—Resident; breeds; an abundant migrant.

¹ Canadian Journal, VII, 1862, 53.

² Auk, XIX, 1902, 281, 400.

³ Transactions Canadian Institute, 1891-92, 45.

⁴ *Ibid.*, 1889-90, 9-11.

155. *Picoides arcticus*. ARCTIC THREE-TOED WOODPECKER.—Accidental winter migrant, first recorded in 1893 (October 21 and December 4); other records are October 19, 1896, and November 1 and 4, 1899.

156. *Picoides americanus*. AMERICAN THREE-TOED WOODPECKER.—One record, a male in my collection taken November 16, 1901.¹

157. *Sphyrapicus varius*. YELLOW-BELLIED WOODPECKER.—Abundant migrant, April 8 to May 13, and September 11 to 28; latest records October 7 to 14, 1906. A rather rare summer resident, breeds.

158. *Geophlœus pileatus abieticola*. NORTHERN PILEATED WOODPECKER.—Said to have been formerly a resident. I have seen specimens taken within twenty or thirty miles of Toronto some years ago, and I recently saw fresh workings of this woodpecker thirty-five miles from the city, near Georgetown.

159. *Melanerpes erythrocephalus*. RED-HEADED WOODPECKER.—Common summer resident, April 19 to August 29; breeds. One winter record (January 28, 1905). This woodpecker was scarce during the summer of 1906.

160. *Centurus carolinus*. RED-BELLIED WOODPECKER.—Accidental migrant. I have examined four specimens, a female, May 19, 1885,² a male, May 24, 1890, in Mr. Maughan's collection, and two taken November 27, 1899.

161. *Colaptes auratus luteus*. NORTHERN FLICKER.—Summer resident, common, April 7 to October 24; breeds in all suitable places. Rare winter resident (January 28, 1905; February 3, 1906). Two of the so-called hybrid flickers have been taken here; one is in the collection of Mr. Ernest Seton,³ the other is in the collection of Mr. Geo. E. Atkinson.

162. *Antrostomus vociferus*. WHIP-POOR-WILL.—Regular migrant; rather rare summer resident, April 14 to October 10; breeds (May 21, 1888).

163. *Chordeiles virginianus*. NIGHTHAWK.—Common summer resident, May 1 to September 9; latest dates September 30, 1889, and October 11, 1906 (H. H. Mitchell). Large flocks appear in the fall for a day or two (August 28, 1904, and September 8, 1892). Breeds (June 28, 1892).

164. *Chaetura pelagica*. CHIMNEY SWIFT.—Common summer resident, April 27 to August 31; earliest April 18, 1891; breeds (June 7, 1892).

165. *Trochilus colubris*. RUBY-THROATED HUMMINGBIRD.—Common summer resident, May 4 to September 14; earliest record April 12, 1890; latest September 22, 1906; usually abundant August 15 to 31; breeds (June 1, 1904).

166. *Tyrannus tyrannus*. KINGBIRD.—Common summer resident, May 11 to August 27; latest record September 15, 1900 (C. W. Nash); breeds (June 11, 1892).

167. *Myiarchus crinitus*. CRESTED FLYCATCHER.—Regular migrant and rare summer resident, May 4 to September 27; breeds (June 22, 1892).

¹ Auk, XIX, 1902, 79.

² Auk, II, 1885, 335.

³ *Ibid.*

168. **Sayornis phœbe.** PHŒBE.—Common summer resident, April 2 to October 22; breeds.

169. **Nuttallornis borealis.** OLIVE-SIDED FLYCATCHER.—Rare spring migrant, May 18 to June 3; earliest May 10, 1900 (J. Hughes Samuel); one was shot on August 9, 1899, by Mr. John Bunker.

170. **Horizopus virens.** WOOD PEWEE.—Summer resident, fairly common, April 3 to September 26; breeds (June 14, 1902, July 1, 1892).

171. **Empidonax flaviventris.** YELLOW-BELLIED FLYCATCHER.—Regular migrant, usually not very common, May 20 to 31; latest spring record June 15, 1894; earliest fall record July 27, 1893; usually from August 14 to 25.

172. **Empidonax traillii alnorum.** ALDER FLYCATCHER.—Rare spring migrant, May 13 to June 5; earliest spring record April 18, 1906; one seen September 22, 1906.

173. **Empidonax minimus.** LEAST FLYCATCHER.—Common migrant, May 9 to 24 (May 13 to 29, 1906), August 13 to 27; breeds (June 6, 1897, Carleton West).

174. **Otocoris alpestris.** HORNED LARK.—This was the original form here and probably bred as late as 1886. I have examined three specimens taken since then, two in 1889 (September 28 and October 12), and one taken October 24, 1891, which is the last record.

175. **Otocoris alpestris praticola.** PRAIRIE HORNED LARK.—Common resident, February 2 to October 22; breeds commonly, April 10 to June 15. This form is a comparatively recent arrival; McIlwraith gives the date at Hamilton as between 1871 and 1873;¹ *hoyti* has not been found here.

176. **Cyanocitta cristata.** BLUE JAY.—Resident, sometimes abundant; rather rare breeder; nest May 15, 1892.

177. **Perisoreus canadensis.** CANADA JAY.—In the winter of 1839-40 a considerable migration of this jay occurred at Toronto, and is recorded by the late Hon. G. W. Allen.² This is the migration referred to by Mr. Ernest Seton³ on the authority of the Rev. John Doel as occurring in the winter of 1836-37. Mr. Doel says, "the bird was previously unknown in the district and has not since been observed." Specimens from this migration are in my collection. There are no further records till October, 1904, when another migration visited southern Ontario and a number of birds were taken at Toronto and other points on Lake Ontario. I have given a full account of this elsewhere.⁴

178. **Corvus corax principalis.** NORTHERN RAVEN.—At one time abundant along the north shore of Lake Ontario, but they disappeared at a very early date. A letter written at Port Hope (62 miles east of

¹ Nuttall Bulletin, VIII, 1883, 143.

² Canadian Journal, I, 1852-53, 167-72.

³ Auk, II, 1885, 335.

⁴ Ontario Natural Science Bulletin, I, 1905, 11, 12.

Toronto) in 1820 mentions "ravens and rooks" as occurring there then; the Rev. John Doel tells me the last pair killed was in the Queen's Park about 1848.

179. *Corvus brachyrhynchos*. AMERICAN CROW.— Abundant resident except in winter; they usually disappear in November and reappear early in February, a few only remaining through the winter. Breeds (April 16 to May 24).

180. *Dolichonyx oryzivorus*. BOBOLINK.— Summer resident, April 19 to September 8; breeds (June 1, 1899).

181. *Molothrus ater*. COWBIRD.— Abundant summer resident, April 2 to early in October; rare winter resident, January 14 to March 29.

182. *Xanthocephalus xanthocephalus*. YELLOW-HEADED BLACKBIRD.— Accidental; one record, a male taken about 1885; this bird is now in my collection.¹

182. *Agelaius phoeniceus*. RED-WINGED BLACKBIRD.— Abundant summer resident, March 8 to November 10; latest record December 25, 1890; breeds (May 31 to June 25).

183. *Sturnella magna*. MEADOWLARK.— Common summer resident, March 16 to October 30; numerous winter records; breeds (May 2 to July 1).

184. *Icterus spurius*. ORCHARD ORIOLE.— Possibly a very rare summer resident; there are about a dozen records, distributed over a long period of years, nearly all in May; Mr. J. Hughes Samuel took an immature male May 20, 1900, and on July 5, observed a pair breeding at Island Park.

185. *Icterus galbula*. BALTIMORE ORIOLE.— Common summer resident, April 12 to September 1; breeds (June 14, 1889).

186. *Euphagus carolinus*. RUSTY BLACKBIRD.— Abundant migrant, April 6 to May 8, and September 9 to October 27.

187. *Quiscalus quiscula æneus*. BRONZED GRACKLE.— Abundant summer resident, March 20 to November 3; earliest record February 26, 1906; a common breeder; said to be a rare winter resident (January, 1906).

188. *Hesperiphona vespertina*. EVENING GROSBEAK.— Winter migrant of irregular occurrence. A flight in the winter of 1854-55 in southern Ontario is the earliest recorded; birds were taken at Toronto on December 25,² at Hamilton in the following April,³ and at Woodstock on May 7, 1855.⁴ Other small flights are recorded elsewhere,⁵ but the great flight was in the winter of 1889-90; the first birds were recorded at Toronto on January 18, and the last on May 26; a very full report was published at the time by a committee of ornithologists;⁶ they had information of 453

¹ Auk, II, 1885, 334.

² Auk, II, 1885, 334.

³ Transactions Canadian Institute, III, 1891-92, 88.

⁴ Canadian Journal, III, 1854-55, 287.

⁵ Transactions Canadian Institute, III, 1891-92, 88; Nuttall Bulletin, VIII, 1883, 146; Auk, IV, 1887, 256; Auk, V, 1888, 208.

⁶ Transactions Canadian Institute, III, 1891-92, 76-89.

specimens in the hands of individuals, and estimated that not less than 1000 grosbeaks were slaughtered. Specimens have been taken since then, in March, 1897 and in January and March, 1902.

189. *Pinicola enucleator leucura*. PINE GROSBEEK.—Irregular winter migrant, sometimes abundant, usually from December to March. A supposed hybrid of this species, taken January 22, 1890, is in the collection of Mr. Ernest Seton, and has been fully described and figured by him.¹

190. *Carpodacus purpureus*. PURPLE FINCH.—Resident, sometimes abundant in winter; not common in summer; breeds (July 13, 1895).

191. *Loxia curvirostra minor*. AMERICAN CROSSBILL.—Irregular winter resident, sometimes abundant, December 25 to May 3. In 1892 crossbills were here from March 30 to May 5, and I took one on July 17, and saw another on the 18th, these latter were attracted by caged birds; a male taken April 14, 1894, is in juvenile plumage.

192. *Loxia leucoptera*. WHITE-WINGED CROSSBILL.—Irregular winter resident, never very common, January 4 to April 14.

193. *Acanthis hornemannii exilipes*. HOARY REDPOLL.—Rare winter migrant. A flock of redpolls that was about East Toronto from February 10 to March 23, 1896, seemed to have consisted altogether of this species. I examined in all nine specimens from this flock; no more were taken till January 8, 1904, when I found one that had been taken from a flock of *linaria*.

194. *Acanthis linaria*. REDPOLL.—Irregular winter resident, sometimes abundant from November to March.

195. *Acanthis linaria holboëllii*. HOLBÖLL'S REDPOLL.—Three specimens are recorded by Mr. Ernest Seton, taken at Lorne Park, a few miles west of Toronto—a male taken March 3, and a male and female March 15, 1888. These were determined by Mr. Robert Ridgway, who said they were not typical of the form but nearer to that than to *linaria*.² I can find no local specimens comparable with these three birds; one of the females, now in my collection, agrees exactly with a breeding female, presumably of this species, from St. Matthew's Mission, Peel River, Mackenzie Territory.

196. *Acanthis linaria rostrata*. GREATER REDPOLL.—Occurs among flocks of *linaria*, but is rare; I have seen about a dozen well marked local specimens taken between November 9 and February 10.

197. *Carduelis carduelis*. EUROPEAN GOLDFINCH.—“A male European Goldfinch was collected May 21, 1887, by Mr. Daniel S. Cox, about a mile north of the city limits—one out of four—while resting on the top of a beech tree. The remaining three flew off in a northerly direction. The birds were evidently in a natural condition and doubtless from the New York colony.” (William Brodie.)

¹ Auk, XI, 1894, 1-3.

² Transactions Canadian Institute, III, 1891-92, 29.

³ Auk, V, 1888, 211.

198. **Astragalinus tristis.** AMERICAN GOLDFINCH.— Resident; abundant in summer and sometimes in winter, though I do not think the same birds are resident in summer and winter; breeds (July 23-30, 1893).

199. **Spinus pinus.** PINE FINCH.— Irregular winter resident, sometimes abundant October 2 to March 23. Siskins bred in Wellington County, at Guelph and Mount Forest, in April and May, 1905.¹

200. **Passer domesticus.** HOUSE SPARROW.— The "Avian Rat," of Tegetmeier, was introduced about 1870, it increases and decreases according to the severity of the winter, but on the whole is still on the increase.

201. **Passerina nivalis.** SNOWFLAKE.— Winter migrant, usually abundant, October 10 to March 15.

202. **Calcarius lapponicus.**— LAPLAND LONGSPUR.— Irregular winter resident October 10 to April 23; latest May 17, 1891; not common, usually found singly with flocks of Snowflakes, but Mr. Nash has recorded flocks October 10-26, 1891.²

203. **Poecetes gramineus.** VESPER SPARROW.— Abundant summer resident, April 7 to October 23; breeds commonly.

204. **Passerculus sandwichensis savanna.** SAVANNA SPARROW.— Common summer resident, April 5 to October 16; breeds (May 31 to June 23).

205. **Coturniculus savannarum passerinus.** GRASSHOPPER SPARROW.— Two records — one taken on Toronto Island by Dr. Brodie, the other by Mr. John Edmonds May 24, 1890, at Ashbridges Bay; both are still in the collection of the Biological Society.

206. **Ammodramus leconteii.** LECONTE'S SPARROW.— One specimen taken by Mr. George Pierce May 5, 1897, is in the collection of Mr. J. H. Ames.³

207. **Ammodramus nelsoni.** NELSON'S SPARROW.— Rare migrant, two taken September 22, 1894, and a female, the only spring record, June 10, 1895, by Mr. Nash, are in my collection; these were examined by Dr. J. Dwight, Jr., who said they were not typical but nearer *nelsoni* than *subvirgatus*. I have seen in all eleven local specimens; latest date October 28, 1896.⁴

208. **Chondestes grammacus.** LARK SPARROW.— Summer resident, rare and very local; earliest record May 3, 1895; there are no fall records; breeds (May 15, 1899; July 1, 1898).

209. **Zonotrichia leucophrys.** WHITE-CROWNED SPARROW.— Regular migrant, common April 15 to May 24; September 27 to October 10; latest record October 19, 1906.

210. **Zonotrichia albicollis.** WHITE-THROATED SPARROW.— Common

¹ Auk, XXII, 1905, 415; Ontario Natural Science Bulletin, II, 1906, 1718.

² Biological Review of Ontario, I, 1894, 30.

³ Auk, XIV, 1897, 411.

⁴ Auk, XVI, 1899, 277.

migrant, April 8 to May 16, and August 28 to October 22; probably breeds; males were heard singing June 6 to July 7, 1906, at several places outside the city.

211. *Spizella monticola*. TREE SPARROW.— Winter resident, sometimes abundant, October 10 to April 17; the majority leave in November and do not return till April.

212. *Spizella socialis*. CHIPPING SPARROW.— Summer resident, abundant April 5 to October 3; earliest, March 16; one of our most common breeders.

213. *Spizella pusilla*. FIELD SPARROW.— Summer resident, sometimes abundant, April 16 to October 14; earliest record April 4, 1890; breeds (May 23 to June 5).

214. *Junco hyemalis*. SLATE-COLORED JUNCO.— Abundant migrant, April 2 to May 20, and September 24 to October 22, and irregular winter resident, December 12 to March 20; breeds rarely (May 24, 1887; July 19, 1892).

215. *Melospiza cinerea melodia*. SONG SPARROW.— Abundant summer resident, March 15 to October 26; a rare and irregular winter resident (December 11, January 31, February 21); one of our most common breeders (May 12 to August 13).

216. *Melospiza lincolni*. LINCOLN'S SPARROW.— Regular spring migrant, May 6 to 26; generally distributed, never common. Mr. J. Hughes Samuel saw three at Island Park September 15, 1900, and I saw one at the same place September 23, 1906.

217. *Melospiza georgiana*. SWAMP SPARROW.— Regular summer resident, common April 14 to October 7; breeds.

218. *Passerella iliaca*. FOX SPARROW.— Regular migrant, local, and usually not common, April 5 to 29, and October 2 to 26. Mr. George E. Atkinson has published a very full account of this sparrow in Toronto.¹

219. *Pipilo erythrophthalmus*. TOWHEE.— Summer resident, fairly common April 13 to October 19; common migrant; latest record November 16, 1899; breeds (May 25, 1890).

220. *Cardinalis cardinalis*. CARDINAL.— Accidental and probably occurs only in winter; there are several local records but two only have dates, a female taken in February, 1900, and a male seen in November, 1902.

221. *Zamelodia ludoviciana*. ROSE-BREASTED GROSBEAK.— Regular spring migrant, fairly common May 10 to 23; Mr. Nash gives fall records from July 13 to the middle of August, and I took a young male on September 10, 1906.

222. *Cyanospiza cyanea*. INDIGO BUNTING.— Regular, though not very common, summer resident, May 18 to August 4, and probably later; breeds.

223. *Piranga erythromelas*. SCARLET TANAGER.— Regular migrant, sometimes common, May 12 to 30, and September 15 to October 13. In

¹ Biological Review of Ontario, I, 1894, 57-63.

May, 1888, a very large number of these birds appeared in the city and attracted much attention.

224. **Piranga rubra.** SUMMER Tanager.—“One specimen taken at Scarboro Heights, near Toronto, by Mr. Herring, in May 1890.”¹ This specimen is now in the museum of the Geological Survey at Ottawa.

225. **Progne subis.** PURPLE MARTIN.—Regular summer resident, local and decreasing, April 18 to August 25; breeds (June 7, 1890).

226. **Petrochelidon lunifrons.** CLIFF SWALLOW.—Regular summer resident, usually from early in May to the middle of August; earliest record April 23, 1890, latest September 8, 1906; breeds locally and is not by any means as common as it was.

227. **Hirundo erythrogastra.** BARN SWALLOW.—Regular summer resident, common April 20 to August 30; earliest record April 8, 1890; breeds (June 25, 1892).

228. **Iridoprocne bicolor.** TREE SWALLOW.—Regular summer resident, common April 8 to September 13; earliest record March 31, 1897; latest fall record October 20, 1906 (H. H. Mitchell); breeds (June 7, 1890).

229. **Riparia riparia.** BANK SWALLOW.—Regular summer resident, common April 19 to September 13; earliest record April 4, 1890, latest October 9, 1886; breeds (June 2, 1892).

230. **Stelgidopteryx serripennis.** ROUGH-WINGED SWALLOW.—Probably a rare summer resident; a male was taken May 16, 1900, and on June 12, 1906, I found a pair building in an old kingfisher's tunnel and took the female.

231. **Ampelis garrulus.** BOHEMIAN WAXWING.—An irregular winter resident, rare. A flight occurred in 1895 when several small flocks spent a month or more in the residential parts of the city. Mr. Geo. E. Atkinson recorded their arrival on February 3; they were absent from the 13th to the 22d, and were last seen on March 6; Mr. Nash took one at East Toronto on the 22d.

232. **Ampelis cedrorum.** CEDAR WAXWING.—Resident, irregular in winter; breeds (June 20, 1898).

233. **Lanius borealis.** NORTHERN SHRIKE.—Regular winter resident, not very common, October 12 to March 22; earliest October 3, 1896; latest April 11, 1898; I took a nest on May 28, 1887, but this is the only record.

234. **Lanius ludovicianus migrans.** MIGRANT SHRIKE.—Regular summer resident, not very common, April 3 to the end of August; earliest record March 23, 1897. This shrike was not originally found here; it was not represented in the Allen collection formed in 1854-55, nor is it mentioned in a list of birds published in 1858,² and McIlwraith says it was first observed at Hamilton in April, 1860;³ breeds.

¹ Macoun, Catalogue of Canadian Birds, 537.

² Hand Book of Toronto, 1858. The list of Toronto birds, pp. 37-56, is not of much value, and is said to have been written by Dr. S. P. May.

³ Canadian Journal, V, 1860, 392.

235. **Vireo olivaceus.** RED-EYED VIREO.—Regular summer resident, common May 12 to October 10; earliest record May 6, 1889; breeds commonly.

236. **Vireo philadelphicus.** PHILADELPHIA VIREO.—Regular migrant, not very common, May 18 to 27, and September 10 to 22.

237. **Vireo gilvus.** WARBLING VIREO.—Regular migrant, not common, May 11 to 24, and September 5 to 24; Mr. J. Hughes Samuel noted this vireo as abundant May 17, 1900.

238. **Vireo flavifrons.** YELLOW-THROATED VIREO.—Regular migrant, rare, May 2 to June 13, and July 6 to the end of August. This and the two preceding species may eventually be found breeding here.

239. **Vireo solitarius.** BLUE-HEADED VIREO.—Regular migrant, common May 10 to 20, and September 17 to October 22.

240. **Mniotilta varia.** BLACK AND WHITE WARBLER.—Abundant migrant, April 25 to May 24, and August 28 to September 26; rare summer resident, breeds.

241. **Helminthophila rubricapilla.** NASHVILLE WARBLER.—Abundant migrant, May 1 to 24, and September 4 to 26. A male was taken June 6, 1891, and a female June 14, 1895.

242. **Helminthophila celata.** ORANGE-CROWNED WARBLER.—Regular migrant, rare, May 7 to 15 and probably later (May 27, 1888, Hamilton, Ont.); in the fall, October 6 to 10. I have the records of only eight in eight years.

243. **Helminthophila peregrina.** TENNESSEE WARBLER.—Regular migrant, rare, May 13 to 22, and September 23 to October 24 (September 5, 1885, Hamilton, Ont.). First taken here in 1886; the records in the 'Proceedings' of the Canadian Institute, 1890-92, refer to the female of the Black-throated Blue Warbler.

244. **Compsothlypis americana usneæ.** NORTHERN PARULA WARBLER.—Abundant migrant May 5 to 29, and September 2 to 29; latest spring record June 3, 1897; latest fall record October 14, 1906.

245. **Dendroica tigrina.** CAPE MAY WARBLER.—Regular migrant, sometimes not uncommon, May 8 to 19, and September 5 to 11; latest spring records May 24, 1890, and May 29, 1906. Formerly one of our rarest warblers; there were not more than four records between 1889 and 1897. Mr. J. Hughes Samuel considers the increase began in 1898, and in 1900 I found them not uncommon in the city.

246. **Dendroica æstiva.** YELLOW WARBLER.—Regular summer resident, abundant May 2 to July 19 (May 4 to September 9, 1906); earliest spring record April 18, 1899; latest fall record September 16, 1899 (J. Hughes Samuel); breeds abundantly (May 23 to June 12).

247. **Dendroica cærulescens.** BLACK-THROATED BLUE WARBLER.—Regular migrant, abundant May 8 to 24, and August 28 to September 29; earliest spring record May 2, 1900; latest fall record October 5, 1895 (J. Hughes Samuel).

248. **Dendroica coronata.** MYRTLE WARBLER.—Regular migrant,

April 29 to May 22, and September 11 to October 22; earliest spring record April 25, 1896 (J. Hughes Samuel). I have never found this warbler common in spring but it is always abundant in the fall.

249. *Dendroica maculosa*. MAGNOLIA WARBLER.— Regular migrant, abundant May 8 to 24, and September 8 to 26; earliest spring record April 15, 1890 (Geo. E. Atkinson); latest, June 1, 1900 (J. Hughes Samuel); earliest fall record August 27, 1900 (J. Hughes Samuel); latest, October 14, 1906.

250. *Dendroica cerulea*. CERULEAN WARBLER.— Rare spring migrant. I have the records of three males, May 24, 1890, May 20, 1893, and May 11, 1897; besides these there are four or five other local specimens, including a pair in the museum of Toronto University, taken in 1856.

251. *Dendroica pensylvanica*. CHESTNUT-SIDED WARBLER.— Abundant migrant, May 3 to 29, and August 19 to September 28; rare summer resident; probably breeds.

252. *Dendroica castanea*. BAY-BREASTED WARBLER.— Regular spring migrant, not very common, May 10 to 24; latest spring record May 30, 1906; one fall record, a young female, August 24, 1906.

253. *Dendroica striata*. BLACK-POLL WARBLER.— Regular migrant, not very common, May 17 to June 3, and August 27 to September 28.

254. *Dendroica blackburniae*. BLACKBURNIAN WARBLER.— Regular migrant, common May 3 to 28, and August 4 to 24; latest fall record September 23, 1906. This was a rare warbler twenty years ago.

255. *Dendroica virens*. BLACK-THROATED GREEN WARBLER.— Abundant migrant, April 28 to May 28, and August 29 to October 12.

256. *Dendroica kirtlandii*. KIRTLAND'S WARBLER.— Accidental; one record, a male taken May 16, 1900, by Mr. J. Hughes Samuel.¹

257. *Dendroica vigorsii*. PINE WARBLER.— Regular migrant, not common, April 20 to May 17, and August 28 to September 7; earliest spring record April 15, 1890, latest May 26, 1894 (J. Hughes Samuel).

258. *Dendroica palmarum*. PALM WARBLER.— Regular migrant, not very common, May 4 to 20, and September 13 to October 10; earliest fall record September 9, 1906. Hamilton records are earlier, April 27, 1891; September 1, 1886.

259. *Dendroica discolor*. PRAIRIE WARBLER.— Two records, May 10 and 11, 1900, both males, the first taken by Mr. J. Hughes Samuel,¹ the other by Mr. J. H. Ames.²

260. *Seiurus aurocapillus*. OVEN-BIRD.— Abundant migrant, May 4 to 20; September 10 to 21; rare summer resident; breeds.

261. *Seiurus noveboracensis*. WATER-THRUSH.— Regular migrant, not very common, May 4 to 17, and August 8 to September 15; possibly a rare summer resident.

262. *Seiurus motacilla*. LOUISIANA WATER-THRUSH.— Two records,

¹ Auk, XVII, 1900, 391.

² Auk, XVIII, 1901, 106.

a female taken by Mr. Ernest Seton, August 23, 1888, on the Credit River (13 miles east of Toronto), the other a female taken by Mr. C. W. Nash at Kew Beach, East Toronto, May 8, 1900. This species appears to be a local though regular migrant at Hamilton.

263. *Geothlypis agilis*. CONNECTICUT WARBLER.—Regular migrant, not common, May 23 to 30, and August 26 to September 12. This was considered one of our rarest warblers till about 1896 when Mr. J. Hughes Samuel found them not uncommon in May at Island Park.

264. *Geothlypis philadelphia*. MOURNING WARBLER.—Regular migrant, not uncommon, May 11 to 30, and August 15 to 26; rare summer resident; breeds. Mr. C. W. Nash took a young bird from the nest, July 1, 1893; Mr. J. Hughes Samuel saw adults with young, July 30, 1895. This is another species that was rare up to a few years ago.

265. *Geothlypis trichas brachidactyla*. NORTHERN YELLOW-THROAT.—Regular migrant, common May 8 to 31, and August 31 to October 6; latest fall record October 19, 1904; rare summer resident (June 6, 1905).

266. *Wilsonia pusilla*. WILSON'S WARBLER.—Regular migrant, common May 11 to 27, and August 26 to September 27.

267. *Wilsonia canadensis*. CANADIAN WARBLER.—Regular migrant, common May 10 to June 1, and August 19 to September 27; possibly a rare summer resident.

268. *Setophaga ruticilla*. AMERICAN REDSTART.—Abundant migrant, May 8 to 24, and August 24 to September 24; common summer resident, May 18 to about August 16; breeds (June 1 to 15).

269. *Anthus pensilvanicus*. AMERICAN PIPIT.—Regular migrant, not common in the spring, May 4 to 10 (May 20 at Hamilton); abundant in the fall, September 14 to November 24.

270. *Galeoscoptes carolinensis*. CATBIRD.—Regular summer resident, common May 4 to September 26; earliest spring record, May 1, 1899; latest, October 15, 1906; breeds commonly.

271. *Toxostoma rufum*. BROWN THRASHER.—Regular summer resident, fairly common, April 21 to September 25; breeds.

272. *Troglodytes aëdon*. HOUSE WREN.—Common migrant and fairly common summer resident, April 21 to October 13; earliest spring record, April 15, 1890; breeds.

273. *Olbiorchilus hiemalis*. WINTER WREN.—Common migrant, April 14 to May 7, and September 10 to October 26; latest fall record November 12, 1895; rare winter resident (January 18, 1892; March 17, 1894); very rare summer resident, breeds (June 2, 1894, W. Raine).

274. *Cistothorus stellaris*. SHORT-BILLED MARSH WREN.—Two records, a female August 29, 1891, and a male June 7, 1895, both taken by Mr. C. W. Nash.¹

275. *Telmatodytes palustris*. LONG-BILLED MARSH WREN.—Common summer resident, April 14 to October 18; breeds (June 5 to July 28).

¹ Auk, XIII, 1896, 347.

276. *Certhia familiaris americana*. BROWN CREEPER.—Common migrant, April 4 to May 24, and September 27 to October 15; irregular winter resident, December 15 to March 8; possibly a rare summer resident.

277. *Sitta carolinensis*. WHITE-BREASTED NUTHATCH.—Winter and fall resident, September 16 to March 16; no summer records except from July 10 to 21, 1892.

278. *Sitta canadensis*. RED-BREASTED NUTHATCH.—Resident between September 2 and May 13, usually leaving about April 5.

279. *Parus atricapillus*. BLACK-CAPPED CHICKADEE.—Common resident, breeds.

280. *Parus hudsonicus*. HUDSONIAN CHICKADEE.—One record, Richmond Hill (13 miles north of Toronto), about 1890.

281. *Regulus satrapa*. GOLDEN-CROWNED KINGLET.—Abundant migrant, April 2 to May 12, and October 6 to 27; irregular winter resident (January 16, 1899, February 3, and April 21, 1894).

282. *Regulus calendula*. RUBY-CROWNED KINGLET.—Abundant migrant, April 20 to May 11, and October 5 to 20; earliest spring record April 4, 1890, latest May 22, 1894; latest fall record November 3, 1907.

283. *Poliophtila cærulea*. BLUE-GRAY GNATCATCHER.—Three records, a male May 9, 1885, in Mr. Ernest Seton's collection;¹ a female taken May 5, 1891, by Mr. O. Spanner;² and a female taken May 10, 1900, by Mr. C. W. Nash.

284. *Hylocichla mustelina*. WOOD THRUSH.—Regular migrant, May 4 to 20; I can find only one fall record, a female taken September 7, 1891; rare summer resident, breeds (May 4, 1890; June 3, 1894; June 22, 1895).

285. *Hylocichla fuscescens*. WILSON'S THRUSH.—Abundant migrant, April 13 to May 16, and September 13 to 26; common resident, May 16 to August 31; breeds (May 29 to June 26).

286. *Hylocichla aliciae*. GRAY-CHEEKED THRUSH.—Regular migrant, rare in spring, May 21 to 27 (May 15 to 29, 1906); not uncommon in fall, September 10 to October 18.

287. *Hylocichla ustulata swainsonii*. OLIVE-BACKED THRUSH.—Common migrant, April 27 to May 26, and September 12 to October 14; earliest spring record, April 13, 1890; earliest fall record, September 1, 1906.

288. *Hylocichla guttata pallasii*. HERMIT THRUSH.—Abundant migrant, April 13 to May 10, and September 23 to October 23; earliest spring record, April 8, 1898; earliest fall record, September 19, 1906; there are several late records (November 20, 1901), and Dr. K. C. McIlwraith observed one from November 21, 1903, to the following January.

289. *Merula migratoria*. ROBIN.—Abundant summer resident, March 24 to October 24, earliest spring record, February 22, 1906; irregular winter resident, January 1 to February 9; breeds abundantly.

¹ Auk, II, 1885, 334.

² Transactions of the Canadian Institute, 1891-92, 73.

290. *Sialia sialis*. BLUEBIRD.—Abundant migrant and summer resident, March 3 to November 11; earliest spring record, February 26, 1906.

HYPOTHETICAL LIST.

18. *Rallus crepitans*. CLAPPER RAIL.—Given in Prof. Hincks's list, and a pair were sent to Paris; given as occurring at Toronto, in 'Hand Book of Toronto,' 1858, 54, and by McIlwraith in his Hamilton list of 1860,¹ but is not mentioned in subsequent lists. In all three cases *R. elegans* is given as well, but even with this evidence the records must be incorrect.

19. *Canachites canadensis canace*. CANADIAN SPRUCE GROUSE.—Of this species the late Hon. G. W. Allen says: "I hardly know whether I am correct in enumerating the Spruce Partridge as among the number of birds found in the immediate neighborhood of Toronto. I have never shot one myself, but I have had specimens brought to me, which were said to have been procured not very many miles from here."² On July 29, 1904, Mr. E. F. Handy, C. E., observed a covey of Spruce Partridge on the tracks of the Grand Trunk Railway near Zephyr (about 45 miles northeast of Toronto); on inquiring Mr. Handy was informed that there had always been a few in the swamp lying between Mount Albert and Zephyr. This is no doubt the most southern point in Ontario where this partridge is found.

20. *Tympanuchus americanus*. PRAIRIE HEN.—It is marked as having been taken at Toronto in 'Hand Book of Toronto,' 1858, 54, with the remark: "This is the Heath Hen of our Legislative Act for the preservation of game." McIlwraith records the taking of one at Hamilton in May, 1886,³ but it seems unlikely that this was a native bird as they were probably extinct by that date in Ontario, though imported birds may have been on some game preserve; but there is no probability that the bird ever came as far east as Lake Ontario.

21. *Meleagris gallopavo fera*. WILD TURKEY.—Dr. Brodie says that many years ago (between 1840 and 1850), a well known and reliable hunter saw a flock on the west side of Yonge Street in the township of Whitechurch; none were taken, but the man's statement was generally believed at the time. Wild Turkeys certainly came as far east as Hamilton, and Mr. C. W. Nash was informed by an old resident of Dundas (a few miles west of Hamilton) that they were found at one time on a farm, now just outside the town limits.

22. *Elanoides forficatus*. SWALLOW-TAILED KITE.—I have a specimen that is said to have been taken here many years ago; it is certainly an Ontario record.

23. *Empidonax virescens*. ACADIAN FLYCATCHER.—The published

¹ Canadian Journal, V, 1860, 394.

² *Ibid.*, I, 1853, 171.

³ Birds of Ontario, 1886, 128.

records all refer to the Alder Flycatcher, but I took what I believe was this species once at Toronto, but the specimen was lost by the taxidermist who skinned it.

24. *Euphagus cyanocephalus*. BREWER'S BLACKBIRD.—I have a specimen that is said to have been taken here.

25. *Linota cannabina*. EUROPEAN LINNET.—Two specimens were seen in a flock of English Sparrows in January, 1890, by Mr. Wm. Loan, who took one alive. This bird was identified by Mr. Ernest Seton who says, "The question how the birds came here is not easily answered for this could not have been a cage bird escaped, as its breast still bore the rosy tinge that is so soon lost in captivity."¹

26. *Helminthophila chrysoptera*. GOLDEN-WINGED WARBLER.—Two taken at Hamilton;² one in the Holman collection was no doubt taken here.

27. *Icteria virens*. YELLOW-BREASTED CHAT.—Mr. John Boyd, of Sarnia, has a specimen which he believes was taken at the Humber in 1889, but he was never able to trace the bird back to the original collector.

28. *Wilsonia mitrata*. HOODED WARBLER.—One in the Holman collection, and one in the Allen collection, were no doubt taken here, one taken at Hamilton.³

29. *Protonotaria citrea*. PROTHONOTARY WARBLER.—A female taken at Hamilton May 23, 1888, by Dr. K. C. McIlwraith; it has been seen here at least once.

30. *Mimus polyglottos*. MOCKINGBIRD.—The Hamilton record given by McIlwraith⁴ is not altogether satisfactory, and Mr. C. W. Nash, who was familiar with the time and place of the record, is doubtful if the bird was correctly identified.

31. *Hylocichla fuscescens salicicola*. WILLOW THRUSH.—I have one, from the McIlwraith collection, taken at Hamilton, May 16, 1895, but it has not yet been detected here.

32. *Hylocichla aliciae bicknelli*. BICKNELL'S THRUSH.—Mr. Ridgway has recognized one bird from Toronto, and two from Hamilton as intermediate in size between this form and *aliciae*, but near *bicknelli* in color.

EXTRALIMITAL LIST.⁵

1. *Grus americana*. WHOOPING CRANE.—One taken at Yarker in the county of Addington, September 27, 1871, is still in the possession of Mr. John Ewart.⁶

¹ Transactions Canadian Institute, I, 1889-90, 16.

² McIlwraith, *Birds of Ontario*, 1886, 253.

³ *Ibid.*, 277.

⁴ *Ibid.*, 284.

⁵ Species recorded from the north shore of Lake Ontario, but not within the geographical limits of this paper; three of those previously mentioned (Auk, XXIII, 439) are in the hypothetical list.

⁶ McIlwraith, *Birds of Ontario*, 1894, 116.

2. *Pica pica hudsonica*. AMERICAN MAGPIE.—Two specimens taken at Odessa, near Kingston, in March 1898, are recorded by Dr. C. K. Clarke.¹

Corrections to Part I.

The footnote on p. 450 refers to No. 101.

Page 452, No. 4 of Hypothetical List, the reference to the footnote should be ⁶ instead of ⁵.

Page 452, No. 5 of Hypothetical List, ⁶ after the word list should be eliminated.

TWENTY-FOURTH CONGRESS OF THE AMERICAN
ORNITHOLOGISTS' UNION.

THE Twenty-fourth Annual Congress of the American Ornithologists' Union convened in Washington, D. C., Monday evening, November 12, 1906. The business meeting was held at 'The Portner,' corner of 15th and U Sts., N. W., and the public sessions at the U. S. National Museum, beginning Tuesday, November 13, and continuing three days.

BUSINESS SESSION.—The meeting was called to order by the President, Mr. Charles F. Batchelder. Twenty-two Fellows were present. The Secretary stated that at the opening of the present Congress the membership of the Union numbered 850, constituted as follows: Fellows, 48; Honorary Fellows, 16; Corresponding Fellows, 60; Members, 73; Associates, 653.

During the year the Union lost sixty-eight members, thirteen by death, thirty-one by resignation, and twenty-four for non-payment of dues. The deceased members include two Honorary Fellows, five Corresponding Fellows, and six Associates, as follows: Dr. Jean Louis Cabanis,² of Berlin, who died February 20, 1906, in the 90th year of his age, and Dr. William T. Blanford, of London,

¹ Auk, XV, 1898, 274.

² For an obituary notice, see Auk, XXIII, p. 247.

England, who died June 23, 1905, at the age of 72 years, Honorary Fellows; Emile Oustalet,¹ who died at Saint Cast, France, October 23, 1905, in his 61st year; Dr. Paul Leverkühn,² who died December 5, 1905, at Sophia, Bulgaria, in the 39th year of his age; Rev. Henry B. Tristram,³ who died in Durham, England, March 8, 1906, at the age of 83 years and 10 months; Victor Fatio,⁴ who died March 19, 1906, in Geneva, Switzerland, aged 67 years, and Sir Walter Lawry Buller, of London, England, who died July 19, 1906, aged 68 years, Corresponding Fellows; also the following Associates: George F. Breninger,⁵ who died December 3, 1905, at Phoenix, Arizona; Frederick C. Paulmier, who died March 3, 1906; La Rue K. Holmes,⁶ who died in Summit, N. J., May 10, 1906, in the 24th year of his age; Miss Grace V. Pomeroy, of Summit, N. J., who died May 14, 1906; Andrew J. Lloyd, who died in Brookline, Mass., June 14, 1906, aged 57 years, and Mrs. Julia Stockton Robins,⁷ who died in Philadelphia, July 2, 1906.

The report of the Treasurer showed the finances of the Union to be in a satisfactory condition.

All of the officers were reelected as follows: Charles F. Batchelder, President; E. W. Nelson and Frank M. Chapman, Vice-Presidents; John H. Sage, Secretary; Jonathan Dwight, Jr., Treasurer; Ruthven Deane, William Dutcher, A. K. Fisher, Chas. W. Richmond, Thos. S. Roberts, Witmer Stone, and F. A. Lucas, members of the Council.

W. L. Sclater, of Colorado Springs, Col., was elected a Corresponding Fellow; Waldron DeWitt Miller, of New York City, and Arthur T. Wayne, of Mt. Pleasant, S. C., were elected to the class of Members, and the following eighty-four persons were elected Associates, namely:

Miss Edith Allen, Hartford, Conn.; R. C. Andrews, New York City; Frank E. Arnold, Providence, R. I.; Leslie B. Benson, Port Jefferson, N. Y.; W. H. Bingaman, Algona, Iowa; Miss E. D. Boardman, Boston,

¹ For an obituary notice, see Auk, XXIII, pp. 355, 356.

² For an obituary notice, see *Ibid.*, XXIII, p. 247.

³ For an obituary notice, see *Ibid.*, XXIII, p. 484.

⁴ For an obituary notice, see *Ibid.*, XXIII, pp. 484, 485.

⁵ For an obituary notice, see *Ibid.*, XXIII, p. 356.

⁶ For an obituary notice, see *Ibid.*, XXIII, p. 356.

⁷ For an obituary notice, see *Ibid.*, XXIII, p. 485.

Mass.; Campbell Bosson, Boston, Mass.; Ernest Boyd, St. Louis, Mo.; Arthur W. Brockway, Hadlyme, Conn.; D. E. Brown, Seattle, Wash.; C. S. Buchanan, New Haven, Mo.; Ernest A. Butler, Philadelphia, Pa.; James Chapin, New Brighton, N. Y.; Rowena A. Clarke, St. Louis, Mo.; Miss Lilian Cleveland, West Medford, Mass.; Chas. H. Davis, Saginaw, W. S., Mich.; Miss Elizabeth D. Davis, Pittsfield, Mass.; Mrs. Susan L. Davis, Newton, Mass.; Allen B. Doggett, Jr., Brooklyn, N. Y.; W. Linfred Dunbar, Bridgeport, Conn.; Alfred Eastgate, Harrisburg, N. D.; Dr. A. F. Eimbeck, New Haven, Mo.; Wm. S. Essick, Reading, Pa.; Douglas Forsyth, New Orleans, La.; Dr. Thos. B. Fletcher, Baltimore, Md.; James P. Garrick, Jr., Weston, S. C.; Stephen S. Gregory, Chicago, Ills.; Alden H. Hadley, Monrovia, Ind.; J. Downey Harvey, San Francisco, Calif.; Rev. Sullivan S. Healey, Pullman, Wash.; Michael F. Henchey, Unionville, Conn.; Carl F. Henning, Boone, Iowa; Stanley G. Jewett, Anthony, Oregon; Miss Anna C. Jonas, Detroit, Mich.; H. Cornelius Judd, Bethel, Conn.; Robert S. Judd, Bethel, Conn.; Clay Judson, Milwaukee, Wis.; Nathaniel T. Kidder, Milton, Mass.; Wm. Kilgore, Jr., Minneapolis, Minn.; Ernest Knaebel, Denver, Colo.; J. I. McCain, Due West, S. C.; Alexander Maitland, New York City; John S. Marley, Kansas City, Mo.; Wm. R. Maxon, Washington, D. C.; Prof. L. H. Miller, Los Angeles, Calif.; Clement Moore, Hackensack, N. J.; T. A. Morgan, Morgantown, W. Va.; Mrs. Harriet W. Myers, Garvanza, Calif.; Chauncey C. Nash, Boston, Mass.; C. W. Nash, Toronto, Ont.; Chas. H. Neff, Portland, Conn.; Stanley E. Piper, Washington, D. C.; Wm. G. Pitcairn, Allegheny, Pa.; Adelaide L. Pollock, Seattle, Wash.; Miss Grace L. Poole, Rockland, Mass.; Mrs. Gene Stratton Porter, Geneva, Ind.; John H. Price, Knowlton, Montana; James R. Ralph, Minneapolis, Minn.; Malcolm W. Rix, Utica, N. Y.; John T. Roberts, Jr., New York City; Chas. M. Roe, Chicago, Ills.; George A. Sanford, New York City; Herbert R. Sass, Charleston, S. C.; Bowen W. Schumacher, Chicago, Ills.; Joseph S. Seabury, Wellesley Hills, Mass.; George Shumway, Galesburg, Ills.; Dr. Clara Smith, Utica, N. Y.; G. Washbourne Smith, New York City; Byron L. Smith, Chicago, Ills.; Aubrey F. Smithson, Kansas City, Mo.; Gilbert M. Stark, Saginaw, W. S., Mich.; John H. Steele, Philadelphia, Pa.; Mrs. J. L. Sweiger, Waterbury, Conn.; Bennett M. Stigall, Kansas City, Mo.; Caroline M. Stevens, Portland, Me.; Chas. Darwin Test, Golden, Colo.; Harriet W. Thompson, Port Sanilac, Mich.; A. O. Treganzer, Salt Lake City, Utah; Julius T. Volkman, Webster Grove, Mo.; Clarence S. Wadsworth, Middletown, Conn.; Henry A. Ward, Milwaukee, Wis.; B. G. Willard, Millis, Mass.; Mrs. Frank B. Witherbee, West Newton, Mass.; Albert H. Wright, Ithaca, N. Y.

Drs. Allen, Dwight, Merriam and Richmond, and Messrs. Brewster, Ridgway and Stone were reappointed 'Committee on Classification and Nomenclature of North American Birds.'

Drs. Fisher, Elliot and Roberts, and Messrs. Chapman and Nelson were appointed 'Committee on Bird Protection,' and given authority to coöperate with a similar committee to be appointed by the National Association of Audubon Societies.

The amendments to the By-Laws, proposed at the last Congress of the Union, were adopted. The class known as Members is thereby increased from seventy-five to one hundred, and members are now to be nominated and elected in the same manner as Fellows. Nominations to either class must be made in writing, and each be signed by three Fellows. Such nominations must give the candidates name in full and his residence, and must be delivered to the Secretary at least three months prior to the Stated Meeting at which they are to be acted on.

PUBLIC SESSIONS. *First Day.*—The meeting was called to order by the President, Mr. Batchelder.

The papers read during the morning session were as follows:

'A plea for the Kildeer,' by William Dutcher.

'Where Wild Birds Sleep,' by Mrs. Irene G. Wheelock. Remarks followed by Mr. Chapman.

'Some Experiments with Nesting Birds,' by E. H. Forbush. Illustrated by lantern slides.

'Ornithological Notes from the West,' by Frank M. Chapman. Illustrated by lantern slides.

The only paper of the afternoon was by Wm. L. Finley on 'The Home Life of the California Condor.' Illustrated with lantern slides by H. T. Bohlman and the author. Remarks followed by Dr. Merriam, the author, and Mr. Chapman. A vote of thanks was given Mr. Finley for his interesting and valuable paper.

In the evening the members of the Union, and their friends, met at dinner at the 'Riggs House.' After the dinner an informal reception was held in the parlors of the same hotel.

Second Day.—The meeting was called to order by Vice-President Nelson.

The papers at the morning session were: 'The Life Zones of New York State as Determined by its Avifauna,' by E. Howard Eaton. Illustrated by lantern slides. Remarks followed by Dr. Merriam, Messrs. Rhoads, Howell, Todd, Dutcher, and the author.

'The Habits of a Young California Condor,' by Wm. L. Finley.

Illustrated with lantern slides by H. T. Bohlman and the author. Remarks followed by Dr. Merriam, and Messrs. Dutcher and Wood.

'An Exhibition of Lantern Slides,' by Wm. L. Bailey, with explanations.

'A Review of the genus *Junco*,' by Dr. Jonathan Dwight, Jr.

'Summer Bird Life of the Newark, New Jersey, Marshes,' by C. G. Abbott. In the absence of the author the paper was summarized by Mr. Chapman.

The papers presented at the afternoon session were:

'On Horseback Through the Deserts of Lower California,' by E. W. Nelson. Illustrated by lantern slides. Remarks followed by Mr. Chapman.

'Imitation in Bird Music — A Study of Wood Thrushes,' and 'Interesting Bird Songs noted in 1906,' by Henry Oldys.

Third Day.— The meeting was called to order by Vice-President Nelson.

The papers of the morning session were:

'Present Condition of Gull and Tern Colonies on the Atlantic Coast,' by Wm. Dutcher and B. S. Bowdish. Remarks followed by Prof. T. G. Pearson.

'On the Eastern Forms of *Geothlypis trichas*,' by Frank M. Chapman.

'Delaware Valley Wild Fowl — Past and Present,' by Samuel N. Rhoads.

'Bachman Warbler Breeding in Logan County, Kentucky,' by G. C. Embury.

'The Nest and Eggs of Bachman Warbler taken near Charleston, S. C.,' by Arthur T. Wayne. In the absence of the author it was read in part by Dr. Allen.

'A Question of Right Nomenclature,' by Wm. Palmer. Remarks followed by Dr. Stejneger, Messrs. Bartsch, Dutcher, Bond, Fuertes, Hitchcock, and the author.

'A Species or a Subspecies,' by Wm. Palmer. Remarks followed by Drs. Bishop and Merriam, Mr. Stone, and the author.

The papers of the afternoon, both illustrated by lantern slides, were as follows:

'Trails of a Naturalist in Nevada,' by H. C. Oberholser.

'Notes on Birds,' by Prof. T. G. Pearson.

Resolutions were adopted thanking the Board of Regents of the Smithsonian Institution for the use of a hall in the U. S. National

Museum for a place of meeting, and for other courtesies extended; to the Local Committee and other Washington members of the Union, and to the Audubon Society of the District of Columbia, for the cordial welcome and generous hospitality shown visiting members.

The next meeting of the Union will be held in Philadelphia, commencing December 9, 1907.

JNO. H. SAGE,
Secretary.

GENERAL NOTES.

Capture of the Glaucous Gull (*Larus glaucus*) in Boston Harbor, Mass.

— On April 23, 1906, while gunning in Boston Harbor, off Quincy, Mass., with Mr. R. R. Freeman, we shot a Glaucous Gull (*Larus glaucus*). The specimen was in slightly immature plumage, having faint brown markings on the back and wings. It was in company with a flock of about four hundred Herring Gulls and especially attracted attention by being the only bird which, in response to calling and the waving of a handkerchief, approached within gunshot. The identification of the specimen was verified by Mr. William Brewster by the examination of one of the wings.
— JOHN A. REMICK, JR., *Boston, Mass.*

Recent Occurrence of the European Teal and the Marbled Godwit near Portland, Maine.— My collection contains a male European Teal (*Nettion crecca*) which was shot in Casco Bay by a fisherman on April 6, 1903. I had the satisfaction of seeing it before it received the attentions of a taxidermist, thus making perfectly sure that no deception was practised in the case. It is a remarkably beautiful and highly typical specimen. So far as I am aware, it is the first of its kind recorded for this State.

The Great Marbled Godwit (*Limosa fedoa*) is represented in my collection by a female shot on Scarborough Beach, August 16, 1904, by Mr. George H. Cushman, a game warden. For many years the species has been almost unknown in this locality.— HENRY H. BROCK, *Portland, Me.*

Baird's Sandpiper at Newfound Lake, Hebron, N. H.— While on a morning's collecting trip September 4, 1906, on the marshes at the head of Newfound Lake, Hebron, N. H., we obtained a specimen of Baird's

Sandpiper (*Actodromas bairdii*) collected by F. G. Blake. It was in company with *Gallinago delicata*, *Actodromas maculata*, *A. minutilla*, *Totanus melanoleucus*, *T. flavipes*, *Helodromas solitarius*, *Actitis macularia*, and *Egialitis semipalmata*. The bird is now in the mounted collection of Camp Pasquaney, Bridgewater, N. H. According to Mr. G. M. Allen's 'Birds of New Hampshire,' this is the fourth locality in which Baird's Sandpiper has been taken in the State.—FRANCIS G. AND MAURICE C. BLAKE, Hanover, N. H.

Another Limpkin (*Aramus giganteus*) in South Carolina.—A Limpkin was shot by Mr. W. L. Harris (who is the postmaster of Charleston) in his yard on Water Street, Charleston, in July, 1904. This specimen was first seen by Mr. Harris at breakfast time, on a morning of July, 1904; the bird was still there at noon, and he then said, "If that bird is there to-night, I'm going to shoot it," which he did. The specimen was mounted by a taxidermist in Charleston, and remained in the possession of Mr. Harris until last spring, when it was acquired by the Charleston Museum; unfortunately the sex was not determined.

The fact that this bird was taken in the city of Charleston, and near "East Battery," proves conclusively that there must be a regular migration northward after the breeding season in Florida, as I reported¹ the capture of two birds of this species that were taken in Aiken County, South Carolina, in October, 1890.

This Charleston specimen of the Limpkin has been recorded by Prof. Paul M. Rea, Director of the Charleston Museum, in 'Bulletin' of the College of Charleston Museum, Vol. II, No. 6, October, 1906.—ARTHUR T. WAYNE, *Honorary Curator Div. Birds, College of Charleston Museum.*

Note on the Clapper Rail in Maine.—Many years ago Mr. Samuel Hanson, of Portland, spoke to me about three examples of a large Rail from Falmouth, one of which he had shot and all of which he had examined. I did not see the birds, for this was long after they had been bagged, and none of them was, I believe, preserved; but they were identified by Mr. Hanson as Clapper Rails (*Rallus crepitans*). This identification I accepted.² Mr. Hanson was a man of education and standing, as well as a sportsman of wide experience in this country and abroad. Throughout his life, which ended a few months ago, he felt much interest in birds, especially in game birds. I think to-day, as I have always thought, that his identification of the rails could hardly have been questioned at the time when the record of them was made. But I now believe that he was mistaken and that the birds were King Rails (*Rallus elegans*). When they were recorded, no King Rails were known to have occurred in Maine.

¹ Auk, XXIII, 1906, 231.

² Bull. Nutt. Orn. Club, Vol. IV, p. 108.

When I cited ¹ the record in my list of the birds of Portland and vicinity, but one such Rail had been noted,² and that was shot in Scarborough. Now, however, there are two records ³ of King Rails from the very marsh on which Mr. Hanson found his birds. On the other hand, no Clapper Rails have been detected there or elsewhere in the vicinity of Portland since his identification was made. While the possibility that he was right remains, the probability that he was mistaken is so strong that I have felt obliged to call attention to it.

There is also to be considered a rail shot "about September, 1864" by Mr. Luther Redlon, and referred to in the original notice of Mr. Hanson's birds as "a probable" Clapper Rail, but not mentioned in my Portland list. If we adopt the hypothesis that the latter were King Rails, it can scarcely be doubted that the former was of the same species, and we are left without evidence that *Rallus crepitans* has occurred near Portland.—NATHAN CLIFFORD BROWN, *Portland, Me.*

A Wounded Sora's Long Swim.—While superintending the unloading of brick schooners at the Mt. Loretto dock, Pleasant Plains, Staten Island, N. Y., on September 20, 1906, I saw what I presumed to be a terrapin swimming along with the current of the ebbing tide. I sculled out in a small boat in order to investigate, and was surprised to find that the supposed turtle was a Sora Rail (*Porzana carolina*). As the boat drew near it beat the water frantically with its wings and made every effort to escape, but when finally captured, manifested a disposition to defend itself, and repeatedly struck my hands and fingers with its bill.

I confined the bird in a crate on one of the schooners, where a number of Sicilian laborers gathered around it, and signified their desire to make a meal of it. One of the laborers thrust a finger between the slats of the crate, and to my astonishment the rail rushed toward it with opened bill. In fact it showed little fear of human beings, pugnaciously resisting every intrusion, but when a small dog belonging on the vessel, approached and barked at it, the bird retreated in apparent terror to the opposite side of the crate.

A decided drooping of the Sora's right wing explained its disablement. It died within a few hours, and when I skinned it I found the muscles on the right side of the sternum badly bruised, and clothed with blood, as if the bird had flown forcibly against some hard object.

Judging from the direction from which the Sora had come, it must have swam all the way across Raritan Bay from the salt marshes near Jacksonville, New Jersey, a distance of at least nine miles.—ROBERT C. MURPHY, *Mt. Sinai, Long Island, N. Y.*

¹ Proc. Port. Soc. Nat. Hist., Vol. II, 1882, p. 30.

² Bull. Nutt. Orn. Club, Vol. VII, p. 60.

³ Brock, Auk, XIII, p. 79; *ibid.*, XIX, p. 285.

A Florida Gallinule on the Coast of Massachusetts.—While the barge 'Geo. W. Stetson' was passing over the shoals near Pollock Rip lightship, about July 30, 1906, a strange bird alighted during the night on the deck. The crew tried to capture it, and it flew to sea again and out of sight, but a little later returned to the vessel and was captured. It was brought here and given to me for identification; it proved to be a Purple Gallinule (*Gallinula galeata*). This would seem to be considerably out of its ordinary range. I liberated it on some fresh-water marshes here (Beverly, Mass.), hoping it would find its way south with some other birds in the fall migration.—FRANK A. BROWN, *Beverly, Mass.*

The Short-eared Owl and Savanna Sparrow Breeding in Wayne County, Michigan.—Prior to the present season of 1906 I have met with the Short-eared Owl (*Asio accipitrinus*) and Savanna Sparrow (*Passerculus sandwichensis savanna*) as migrants only, and there seems to be no record of their occurrence in the height of the breeding season. I now take pleasure in placing on record positive proof of both species breeding in the county.

SHORT-EARED OWL.—On P. C. 618, Village of Grosse Pointe Farms, there is a tract of about 40 acres of land which was once under cultivation, but later abandoned as too low and swampy for successful crop raising. This has grown to grass, weeds and rushes according to the various elevations. Here, on May 30, Mr. Herbert Spicer and the writer watched a Marsh Hawk to her nest. She was wary and it took an hour and a quarter to do it. Twice during that time a male Short-eared Owl rose from the weeds near a tongue of bushes, extending from the bordering bush land, and drove the hawk from that vicinity. On each occasion he remained about a half hour in the air, apparently taking delight in the exercise, sometimes sailing on outstretched wings but mostly pounding the air with powerful strokes, the wings appearing to touch above his back and sweep downward nearly the whole semicircle. We carefully marked the spot where he went down and later worked toward it. When about 400 feet away the female sprang into the air, just out of gunshot range, and was joined by the male as she passed over him. They drifted before the wind nearly two miles, then worked back and sailed above us high in the air. We did not search thoroughly for the nest, as it was late in the day, and when we left the owls could be seen perched on the dead top of a large elm in the woods. I returned, June 10, accompanied by Messrs. Spicer, Wisener and my brother and, as they are experienced field men, I felt certain of success if a nest existed. We soon flushed both owls and this time they kept on going and were seen no more. The nest was soon found on a higher portion of the field, about twenty rods from the bordering bushes and close to where the female was flushed. It was a mere platform of dead marsh grass, half an inch thick and covering a spot of bare ground ten by eighteen inches. The long 'saw-grass' formed an arch over the nest,

but there was an opening at the easterly end leading into an open space about two feet wide by four long — a sort of play and feeding grounds for the young. One young bird was all the nest contained, but as this owl lays from four to seven, and usually five or six, eggs we concluded the remainder had concealed themselves. A systematic search soon brought to light another of the brood. It was squatted down, with beak and throat lying flat on the ground, and well concealed by the thick grass, further aided by its blending colors. It was some days older than the other, judging by its more advanced feather development. These two being all I desired for my collection, we immediately left the neighborhood so as not to further disturb the family and possibly secure a set of eggs next year. It is worthy of note that the nest and vicinity was kept clean of all castings, down, feathers, etc., that would tend to betray its existence.

The young proclaimed their defiance by a loud snapping of the mandibles, sometimes varied by a hiss, and when alone in another room frequently uttered a mournful little cooing note. While I was in sight they made no attempt to walk and merely squatted closer to the floor as I approached and touched them, but the moment they supposed themselves alone they seemed inspired with new life. They stood up, glanced quickly around and started away on a rapid run with neck and head extended forward, but instantly stopped and squatted when I appeared. Both threw up castings of mouse fur and bones. I made skins of them that night but have since regretted not keeping one alive for study.

SAVANNA SPARROW.— May 6, 1906, I found this sparrow numerous about some mud flats partly covered and surrounded by weeds. This piece of ground contained about six acres of P. C. 122, Village of Grosse Pointe Farms. These birds I regarded as migrants, but the conditions favoring a possible nesting place I returned June 10, when I found five pairs and secured a young bird just learning to fly.

I was over this same ground June 17 and 24, but the entire colony had disappeared, nor were they anywhere on the several square miles of suitable territory in that part of the county. The owls, also, were seen for the last time June 17.

This tends to confirm my opinion of what should constitute a breeding record. Articles sometimes appear entitled the breeding of certain birds in certain localities but we find, upon perusal, that the statements are backed by no stronger evidence than the fact of observing the birds in the breeding season or the taking of a full grown young or a female showing conclusive evidence of having recently reared a brood. I believe nothing should be accepted as a positive record except the finding of a nest containing eggs or young or the taking of a young bird not yet able to fly well.

The above colony of sparrows disappeared between June 10 and 17, and the Short-eared Owls between June 17 and 24. They may have gone to the extensive marshy meadow lands in St. Clair County, but wherever they went the possibility was open of some ornithologist securing parents and young only a few weeks from the nest in a locality where they did not

breed. Many similar cases have come to my notice, especially among the warblers.—J. CLAIRE WOOD, *Detroit, Michigan*.

The Breeding Habits of *Empidonax virescens* in Connecticut.—On June 2, 1906, I was out collecting, in Stamford, Conn., with Mr. W. H. Hoyt. We were searching for a Hooded Warbler's nest in a dense laurel brake on the bank of a stream, when Mr. Hoyt found a nest of the Green-crested Flycatcher. The nest was compactly built, resembling a rather shallow nest of the Red-eyed Vireo, and was suspended from a fork at the end of a bush sapling about eight feet from the ground. The nest contained three fresh eggs. Both birds were shot, and upon dissection it was evident that the set was complete.

We proceeded about a mile up the river and there found an apparently well established colony of the birds. We first found a nest at the end of a limb of a large hemlock tree. The nest was about eight feet from the ground and was composed of shreds of inner hemlock bark. The cup was very shallow, and while the mass was packed into a fairly solid nest, a considerable number of shreds hung down in festoons from the nest for eight or ten inches. The three eggs were slightly incubated, and the female was so bold in their defence, darting at us and striking our hands when we touched the nest, that we were finally obliged to kill her with a stick before we could take the eggs.

Within 200 yards of this nest, we saw two other pairs of these birds, evidently breeding, although we were unable to find the nests. We found, however, six old nests, of which two were in hemlocks and four in bushes. The nests are so characteristic in situation and structure that I think there can be little doubt that these old nests were also those of *Empidonax virescens*. The nests are so frail that I do not believe they could hold together more than two years, which would seem to imply that three or four pairs have bred in this colony for several years.

On June 7, 1906, I returned to make another search for the nests. I clearly located three pairs of the birds and finally found one nest. It was composed of dead grass and was so roughly thrown together, with the strings and ends hanging down so loosely, that I should never have guessed it was a new nest had I not seen the bird fly to it. It also contained three eggs, and the bird was quite wild and shy. The nest was, as usual, in a fork at the end of a beech limb, about nine feet from the ground.

There are two unreported records by local collectors of *Empidonax virescens* breeding in Stamford (one by Mr. W. H. Hoyt, and one by Mr. G. Rowell), but they were made a number of years ago, and were merely rare and irregular finds. These records apparently show that the bird breeds regularly in Stamford, and is probably very much commoner with us than has been hitherto supposed.—LOUIS N. PORTER, *Stamford, Conn.*

***Empidonax griseus* Brewster vs. *Empidonax canescens* Salvin and Godman.**—In 'The Auk' for January, 1904, p. 80, I published a note showing that the two names given above apply to the same bird and that

canescens appeared in a February brochure of the 'Biologia' (by inadvertence said to be March in my note), thus antedating the publication of *griseus* in the April Auk for the same year, 1889. In this connection both Mr. Brewster, with whom the matter had been discussed, and the writer had overlooked a footnote in Ridgway's 'Manual N. A. Birds,' 2d ed., p. 599, giving the date of publication of *griseus* as Jan. 31, 1889. Further inquiry has brought to light the fact that the author's separates of the paper in which *E. griseus* was described bears the following imprint: "[Author's edition, published Jan. 31, 1889.]" This early publication, antedating the appearance of 'The Auk,' and also the part of the 'Biologia' containing the name *canescens*, gives unquestionable priority to the name *griseus*, of which *canescens* must stand as a synonym.—E. W. NELSON, *Biological Survey, U. S. Dept. Agriculture, Washington, D. C.*

The Raven near Portland, Maine.—In 1882 I made note¹ of a Raven, presumably *Corvus corax principalis*, which was killed in the town of Cumberland, near Portland, December 31, 1875. I examined the specimen at the time; but I do not know what became of it, and therefore cannot positively state that it represented *principalis*.

No doubt the Raven was to be found regularly about Portland in olden times;² but I am able to cite only one other record³ of its occurrence within recent years, and that is regrettably indefinite. I have never seen the bird alive near the city. I have, however, seen a second local specimen. A handsome male, quite typical of *principalis*, was taken on Cape Elizabeth, January 12, 1884, was secured in the flesh for my collection and was transferred, a few years later, to the cabinet of the Portland Society of Natural History where it remains (No. 3773, N. C. B.).—NATHAN CLIFFORD BROWN, *Portland, Me.*

Two Ravens (*Corvus corax principalis*) Seen at Harpswell, Maine.—In bringing the local status of the Raven up to date, it seems desirable to record two living examples which I saw at Little Mark Island, Harpswell, Maine, October 5, 1889. Little Mark Island is about nine and a half nautical miles nearly east of Portland.

The Raven was a bird with which I had had a long acquaintance: therefore, as I watched this pair under favorable conditions, and listened to their characteristic notes, I was perfectly sure of the identification.—ARTHUR H. NORTON, *Portland, Me.*

The Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*) in Georgia.—A young male of this species was taken by Dr. Eugene Edmund Murphey at Augusta, Georgia, on September 23, 1893, and is now in his

¹ Proc. Portland Soc. Nat. Hist., Vol. II, p. 17.

² See Brewster, Birds of the Cambridge Region, p. 237.

³ Smith, Forest and Stream, Vol. XIX, 1883, p. 485.

collection. This specimen has been hitherto unrecorded. I am indebted to Dr. Murphey for the privilege of announcing its capture, which is the first record for Georgia. In the South Atlantic States this species was taken at Chester, South Carolina, by Mr. Leverett M. Loomis, on April 18, 1884. There is also a Florida record in Coues's 'Birds of the Northwest,' p. 188.—ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

A new Colorado Record for the White-winged Crossbill (*Loxia leucoptera*).—On each of several different mornings during the latter part of last August, a pair of these birds were seen and closely observed by me at a ranch situated on a small tributary of upper Bear Creek, in Clear Creek County, Colo., at an altitude of about 8400 feet. My observations were made at very close range, with the aid of an excellent opera-glass, and were fully corroborated by Mr. Charles C. Truesdell of Syracuse, New York, as well as by other members of our party. On each of the three or four occasions when we saw them, the birds flew down to a small stream and as we were generally within fifteen feet of them, we enjoyed most perfect opportunities to make them out in every detail of their "field characters." The male and female staid close to each other, permitting us to note in a most satisfactory way, their characteristic cross bills and conspicuous, white double wing-bars, tending to, but not quite attaining, confluence, as well as all other external features of form, marking and coloration that characterize the species. On one occasion a female Mexican Crossbill (*L. curvirostra stricklandi*) joined the White-wings at the water's edge, and associated with them in a friendly way for several minutes, thus affording to me an excellent chance for comparison. The greater compactness and elegance, and smaller size, of the female *leucoptera* were noticeable. The Mexican, after remaining with the others for a time, joined her mate in a near-by spruce tree, where both staid motionless, though waiting for their aristocratic friends to conclude their repast (whatever it was). When the latter took flight the Mexican Crossbills left their perch and followed closely after.—ERNEST KNAEBEL, *Denver, Col.*

An Early Date for the Arrival of the Ipswich Sparrow (*Passerculus princeps*) on the Coast of South Carolina.—Being desirous of ascertaining the date upon which this species makes its appearance in the autumn, I visited Long Island (near Charleston) on November 3, 1906, and am satisfied that I flushed one, but was unable to secure it as it was very wild. On November 6 I again visited the island and succeeded in obtaining a female about four miles from the place where the specimen was flushed on the 3d. The specimen taken was moulting the feathers about the throat.

According to Mr. Brewster,¹ the Ipswich Sparrow occurs along the coast of Massachusetts by the middle of October. From Boston or Cape Cod to Charleston by the coast line is very nearly one thousand miles,

¹ W. Brewster, in H. D. Minot's Land-birds and Game-birds of New England, ed. 2, 1895, 201.

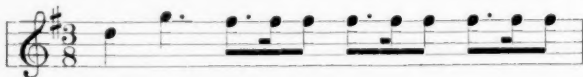
so it can be seen that this species covers the distance between the two places in a little more than two weeks.—ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

Macgillivray's Seaside Sparrow (*Ammodramus maritimus macgillivrayi*) with **Fourteen Rectrices**.—On April 12, 1906, I shot an adult female Macgillivray's Seaside Sparrow which had *fourteen* tail feathers, one of them, being shot, dropped out upon examining the specimen.

As I stated in 'The Auk,' Vol. XXII, 1905, p. 398, in regard to Henslow's Sparrow with thirteen rectrices, "the additional rectrix may prove to be a character peculiar to *females* of the Fringillidae, and not to the males in certain genera," and the capture of this bird with fourteen rectrices seems to confirm my suspicions. The specimen was taken near Mount Pleasant, S. C.—ARTHUR T. WAYNE, Mount Pleasant, S. C.

The Junco Breeding at Wellfleet, Mass.— On June 16, 1906, at Wellfleet, Cape Cod, Mass., I flushed a Junco (*Junco hyemalis*) from beside a wood-road. On investigation I found a nest, containing four young birds. It was placed under a tussock of grass about four feet from the road, running parallel to a pond.— JOHN A. REMICK, JR., *Boston, Mass.*

A New White-throat Song.—Last summer it was my good fortune to hear a charming song from a White-throated Sparrow, which, so far as I am aware, has never before been published. In the woods of Thornton, N. H., the notes of *Zonotrichia albicollis* are among the most characteristic sounds in the early summer, growing less frequent toward the end of July, and ceasing altogether early in August. The normal song, as I have heard it there, is as follows:



(The exact pitch of this and my other notations I have no means of determining, and have therefore put them into the key of G, following therein similar notations observed by Mr. Henry Oldys of Washington, who has kindly furnished me with a number of interesting White-throat songs.)

On the 24th of July, 1906, about noon, my attention was attracted by the following fragment of a song from a White-throat:



A few minutes later I heard the same song in its complete form, as follows:



This song, unusually sweet and plaintive, was constantly repeated, and was occasionally answered from the neighborhood woods by the song which I have indicated as the normal White-throat song in that locality.

There are two rather unusual features in this song: first, its descending character, and, secondly, the fact that its last notes are in groups of 4 instead of 3. Both of these features have been noted by Mr. Oldys, but never combined in precisely the same form as that which I secured. For example, he notes the following song which has the same descending character as mine, but differs from it in having triplets instead of quadruplets at the end:



Again, he secured a song containing 4-note groups at the end, but differing from mine at the beginning, thus:



From these and other similar examples, the diversity of form which the White-throated Sparrow's song assumes is apparent, and the melody which I chanced to secure is merely one of a great variety of songs with which the woods are doubtless constantly echoing, but which pass unnoticed until some trapper happens to catch the air and preserve it.— ALFRED M. DAME, *Worcester Academy, Worcester, Mass.*

Scarlet Tanager (*Piranga erythromelas*) at **Ottawa, Canada.**— This handsome bird is becoming decidedly more abundant here than formerly. This was plainly noticeable the last spring. There were about ten around a house at Blueberry Point, a few miles from here, early in May, and at Bushwood, at the city limits — a place where a few were seen every spring, if nowhere else — their unusual abundance was noted by the most casual observer. I was told that one poor specimen of the human kind had about ten of these beauties in a trap cage. They even invaded the tree-lined streets of our city. On May 26 I noticed a female in a large willow tree next to my house, and on the 29th a fine male put a streak of color into the scene. This specimen condescended so low as to drink out of a common mudpuddle on the street, together with the English Sparrows, who, for once, stood back, awestruck and wondering as it seemed, at this great beauty. Farmers also from many points to the north, east, and west of here asked me about these birds, some saying they had seen them this spring for the first time.— G. EIFRIG, *Ottawa, Canada.*

The Nesting of *Stelgidopteryx serripennis* in Norwich, Vt.— May 6, 1905, I was walking along the bank of the Connecticut River in Nor-

wich, Vt., when two swallows, perched on a dead limb over the water, attracted my notice. A near view at once made their identification as Rough-winged Swallows certain. On a visit to the same place the following day, I found the swallows still about, and in hopes of obtaining a breeding record I began to search for a nest.

On May 12 I was rewarded by seeing the pair of swallows flying back and forth to a clay bank beside the road. There, about twenty feet up, was a hole into which the birds were carrying grass and leaves for lining material. The tunnel, measuring 20 inches in length, slanted slightly upward, and contained a nest at the further end. The hole was noticeably larger in diameter than those of a colony of Bank Swallows in a bank near by.

My observation of their nesting was interrupted more or less by other work and so is not as complete as I wish. During the last two weeks of May the swallows were busy incubating, both taking turns at sitting on the eggs. In early June the young were hatched and both birds took care of the young. Unfortunately I had to leave before the young birds were able to fly.

April 29, 1906, I found the pair of Rough-winged Swallows again flying back and forth over the river. They returned to the old nest, which they cleaned out and relined, and again used to rear their young. Their return to the old nest leads me to feel quite sure that they have used the nest for a number of years, and I shall look for them again next spring.

That a pair of Rough-winged Swallows have chosen this spot to breed in, seems of unusual interest to me, because in a heavy hemlock woods not more than one hundred yards distant, Winter Wrens, Red-breasted Nuthatches, and a pair of Northern Pileated Woodpeckers breed.—FRANCIS G. BLAKE, *Hanover, N. H.*

A New Hampshire Record for *Stelgidopteryx serripennis*.—The pair of Rough-winged Swallows mentioned above have often been observed to fly across the Connecticut river into New Hampshire territory at Hanover. According to Mr. G. M. Allen's 'Birds of New Hampshire,' this is the first record of Rough-winged Swallows in the State.—FRANCIS G. BLAKE, *Hanover, N. H.*

The Philadelphia Vireo (*Vireo philadelphicus*) in Georgia.—An adult male of this vireo was taken by Mr. George P. Butler on September 17, 1890, in Richmond County, Georgia. This specimen is now in my collection.

The Philadelphia Vireo is a *rara avis* in the South Atlantic States and I have never met with it. As far as I am aware there are no records for North and South Carolina, or Florida.—ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

Connecticut Warbler in Maine.—September 16, 1906, in the woods of Cape Elizabeth, I saw a warbler which I could not fully identify at the time, but which answered the description of a Connecticut Warbler, the white eye-ring being particularly prominent. The following day, September 17, 1906, a cat brought to a cottage, about 200 yards from the spot where I saw the above mentioned bird, a young male Connecticut Warbler. The specimen was taken to Mr. Arthur H. Norton, curator of the Portland Society of Natural History, and was verified by him. The skin is now in the collection of the Society. This, I believe, is the seventh record of this warbler in southwestern Maine. The previous six records are as follows: Brown, Cape Elizabeth, Aug. 30, 1878, Abstract Proc. Portland Soc. Nat. Hist., 1882; Goodale, Saco, Sept. 1885, Sept. 8, 1886, and Sept. 15, 1886, Goodale in Auk, Vol. IV, p. 77; Norton, Westbrook, Sept. 20, 1896, Bull. Univ. of Maine, No. III, p. 119; Norton, Westbrook, Sept. 5, 1901, Journal Maine Ornith. Soc., Vol. VI, p. 47.—W. H. BROWNSON, *Portland, Me.*

Cinclus mexicanus not a Costa Rican Bird.—In 'The Auk' for October, 1891, Mr. Cherrie extended the range of the American Dipper (*Cinclus mexicanus*) "south from Guatemala to Costa Rica" and stated that "*C. mexicanus* is a comparatively common bird along many of the mountain streams" in the last named country while its congener, *C. ardesiacus*, he considers rare. This record was cited, with an interrogation mark, in the synonymy of *C. mexicanus mexicanus* on p. 678 of Part III, 'Birds of North and Middle America,' with the observation, in a footnote, that possibly the Costa Rican bird "represented a different form." Since the publication of Part III I have been able to examine the specimens in the Costa Rica National Museum, with the result that all the specimens labeled *C. mexicanus* (in Mr. Cherrie's handwriting) are adults of *C. ardesiacus* while those labeled *C. ardesiacus* (also by Mr. Cherrie) are young of that species. The two stages are so conspicuously different in coloration (the young of *C. ardesiacus* being nearly pure white beneath) that, in the absence of specimens of *C. mexicanus* for comparison, it is scarcely to be wondered that Mr. Cherrie mistook them for distinct species.—ROBERT RIDGWAY, *Washington, D. C.*

A Carolina Wren in Middlesex Fells, Massachusetts.—On November 20, 1906, the call-notes of a wren were heard within the border of this State Reservation on the Wyoming side, and upon investigation the bird was found to be a Carolina Wren (*Thryothorus ludovicianus*). It was moving in and about piles of cord wood laid up in the work of cutting out and sawing the large pines and hemlocks which the gypsy moths have killed. I stood with my back to one pile while the activity of the wren about another pile was observed and enjoyed with keen interest. Presently it came over into the pile beside which I stood and worked in among

the sticks of wood and out onto the top within four or five feet of me, affording views at very near range. The coloration was strong in its reddish brown above, shading brighter from the crown to the rump, and in its decided ochraceous-buff tint below; while when the head was thrown back the throat showed almost clear white. Conspicuous over the eye was the white line and clearly discernible were the white outer edges and spottings of the wings. From the wood piles the wren moved up among the sharp rocks of the hillside, going in and out of the holes between the rocks. The following day it was again visited and found in the family woodpile of the only house standing near and within the reservation. Here it passed back and forth, in and out, from woodpile to refuse heap of old blinds and fencing and through a cart-shed near by. Upon subsequent visits of myself and friends up to November 29 the wren appeared more shy and less disposed to afford good views of itself, remaining hidden for an hour, it might be, without even uttering a call-note and then suddenly appearing.

The last published records of Carolina Wrens in this vicinity are those in Mr. William Brewster's valuable work on the 'Birds of the Cambridge Region,' 1906, in which one is given as seen by Mr. Ralph Hoffmann on May 4, 1902, in Belmont (Auk, Vol. XIX, p. 292), and one again March 7, 1903, about a mile distant from the previous locality, also in Belmont, and continuing to be seen by local observers to the end of May, regarded as perhaps the same bird as seen in 1902. Early in June, 1903, Mr. William P. Hadley killed a Carolina Wren on Arlington Heights, whither it is thought this same bird may have strayed. Messrs. Howe and Allen in their 'Birds of Massachusetts' give six other records within the State between the years 1876 and 1899 inclusive. To these are to be added two later records in 'The Auk,' namely, one (Vol. XVIII, p. 397), giving the first definite record of the species nesting in the State, namely, on Naushon Island, July, 1901, and the other (Vol. XX, p. 69) giving Mr. Owen Durfee's account of taking a young bird in juvenal plumage at Fall River, Sept. 6, 1902.

The Middlesex Fells bird would seem, therefore, to be the tenth which has been recorded within the State in a period of thirty years.—HORACE W. WRIGHT, *Boston, Mass.*

Some Corrected Records.—A few changes should be made in Mr. Bailey's paper on birds of western Mexico published in 'The Auk,' October, 1906, pp. 369–391. These are as follows:—No. 32, *Ortalis vetula macalli* should read *Ortalis wagleri*. *O. v. macalli* is limited to northeastern Mexico.

No. 67, *Myiarchus lawrencei* should read *Myiarchus lawrencei olivascens*. *M. lawrencei* belongs to eastern and southern Mexico.

No. 68, *Myiarchus lawrencei olivascens*, from Cleofas Island, should read *Myiarchus lawrencei tresmariae*, the latter being the resident form on all the Tres Marias Islands.

No. 76, *Carpodacus mexicanus* subsp.? = *Carpodacus mexicanus rhodocolpus*, the common resident form at Tepic.

No. 77, *Spizella socialis* subsp.? = *Spizella socialis arizonæ*, which is not uncommon about Tepic at certain seasons.—E. W. NELSON, *Biological Survey, U. S. Dept. Agriculture, Washington, D. C.*

Rare Northern Birds near Chicago, Ill.—Two miles north of Waukegan, Ill., is a low barren tract of sand interspersed with low sand hills and ridges and small sloughs, the northern end of which is sparingly planted with white pines, the greater part of which, I learn, were placed there in the early seventies, by Mr. T. H. Douglass of Waukegan. The ground is thickly covered with juniper and cedar. From November 5 to 13, this year (1906) I have observed and taken the following birds:

Penthestes hudsonicus hudsonicus. Three specimens seen, two taken.

Spinus pinus. Several large flocks seen, eight taken.

Acanthis linaria linaria. Two large flocks seen, twelve taken.

Pinicola enucleator leucura. Two seen, two taken. At Lake Forest, Ill., a flock of six have been feeding on the box-elder trees.

Loxia curvirostra minor. Two or three small flocks have been seen and a number taken. Three birds which I have, exceed some measurements of *stricklandi*.

Loxia leucoptera. A great many small flocks seen and a number of specimens taken. These birds are feeding on the juniper berries.

Plectrophenax nivalis. A few small flocks of this bird were seen on the Lake shore; the first visit we have had for several years of this bird.

Coccothraustes vespertinus. A small flock of these birds have been seen at Waukegan by Mr. T. H. Douglass.

Ampelis garrulus. A small flock seen by Mr. Douglass in his yard.—FRANK M. WOODRUFF, *Chicago Academy of Science, Lincoln Park, Chicago, Ill.*

Telescope Observations of Migrating Birds.—At Urbana, Illinois, between 9.45 and 10.45 p. m. on the seventh of last October, the writer watched migrating birds through a four-inch telescope directed toward the moon. The diversity in the direction of the flight on this evening seems worthy of record. Out of a total of fifty-four birds, forty-two were flying in a general southerly direction, about one-half of these passing directly southward, while others were headed southwest or southeast. A few passed nearly eastward or westward. The remaining twelve, or nearly one-fourth of the entire number, were flying in a general northerly direction. In determining the direction it was assumed that the flight in all cases was horizontal. Between 9 and 9.20 on the same evening Professor Joel Stebbins, of the department of astronomy, counted thirteen birds flying southward and five flying northward. The wind was from the southeast, and had a velocity of only five miles an hour, as shown by an anemometer record. The temperature at 9 p. m. was 52° F.

An attempt was made to measure the speed of the birds by the method described by Professor Stebbins and Mr. Fath in 'Science' for July 13, 1906. Two telescopes are placed a measured distance apart on a line running north and south. The lines joining the telescopes with the moon are practically parallel, and the time taken for a bird to pass between these lines gives the rate of flight. On this evening only two birds were seen by both observers. The birds were flying southward. Professor Stebbins's calculations indicated that the rate of one was about sixty-eight miles an hour and that of the other about ninety-three miles an hour.—F. W. CARPENTER, *University of Illinois*.

A Migration Disaster in Western Ontario.—The early days of October, 1906, were warm and damp, but on the 6th came a north wind which carried the night temperature down to nearly freezing. Near there it stayed with little variation until the 10th, and on the 10th, the north wind brought snow through the western part of Ontario. At London there was only 2 or 3 inches, which vanished early next day; and the thermometer fell to only 32 degrees on the night of the 10th, and to 28 on the 11th, but ten miles west, there was 5 inches of snow at 5 P. M., Oct 10, and towards Lake Huron, at the southeast corner, between Goderich and Sarnia, the snow attained a depth of nearly a foot and a half, and the temperature dropped considerably lower than at London. On that night, apparently, there must have been a heavy migration of birds across Lake Huron, and the cold and snow combined overcame many of them, so that they fell in the lake and were drowned.

Thanksgiving day fell on the 18th, and Mr. Newton Tripp of Forest, spent the day on the lake shore, near Port Franks, and observed hundreds of birds on the shore dead, cast up by the waves. He wrote me about it next day, calculating 5000 dead birds to the mile, and I took the first train to the scene of the tragedy and drove out to the lake shore that night. On the morning of the 21st, I patrolled the beach south from Grand Bend, and after covering several miles and seeing only a few dead birds, I came at last to the region of death. At first the birds were not very close together, but eventually became so plentiful that in one place I put my foot on four, and saw as many as a dozen in four or five feet.

I began a census at once, which I continued until the lengthening shadows warned me to hurry on to the river so as to cross in daylight, but in the two or three hours spent in the count I recorded the following:

1 Black-throated Green Warbler,	4 Robins,
1 Yellow Rail,	5 Fox Sparrows,
1 Blue-headed Vireo,	5 Savanna Sparrows,
1 Red-eyed Vireo,	5 Palm Warblers,
1 Yellow-bellied Sapsucker,	7 Myrtle Warblers,
2 Black-throated Blue Warblers,	12 Lincoln Sparrows,
3 Flickers,	15 Ruby-crowned Kinglets,

18 White-crowned Sparrows,	100 Winter Wrens,
19 Rusty Grackles,	130 Swamp Sparrows,
20 Hermit Thrushes,	131 Golden-crested Kinglets,
22 Brown Creepers,	153 White-throated Sparrows,
24 Saw-whet Owls,	358 Tree Sparrows,
30 Song Sparrows,	417 Juncos.
	Total, 1845.

After consuming all the time I could spare in this work, I walked over two miles or so of beach, where the birds were more common than on the shore where the count was taken; this brought me within half a mile of the mouth of the Sable River, and I then crossed it and turned my steps inland to a railway station.

In Mr. Tripp's letter he spoke of the birds extending for miles along the beach, and I did not even touch the ground he mentioned.

After my return I wrote to various persons near the lake shore and the information received shows up this migration in rather a strange light. It appears that from below Grand Bend, the birds were very numerous until beyond Stoney Point, but towards Kettle Point they diminished and were not plentiful again until Blue Point, beyond which they were "laying six deep in one place." Thus it appears that from the region near Kettle Point to near Blue Point there were very few birds, while northeast of Kettle Point and southwest of Blue Point the destruction was very great.

The northeastern section, of which I covered perhaps two miles, would have approximately 1000 birds to the mile, and the whole section might be perhaps ten miles; the western section probably was thickly covered but the length is unknown, possibly three miles, or perhaps even ten.

The lighthouse keepers to the north report no damage, so it is likely that the migration was limited to the district referred to.

It was a surprise to me to learn that the birds crossed Lake Huron, but Mr. W. W. Cooke tells me that he believes that "the birds fly lengthwise of Lake Huron, *i. e.*, north and south, and also diagonally, northwest and southeast, in either case making the longest possible flight over water. The greatest distance they could find on Lake Huron would be less than 200 miles."

Whether this migration was a southern or southeastern one is hard to say. If southeastern, why were there few from Kettle Point (12 miles) to Blue Point, and if southern, why did not the birds, instead of flying parallel with the east shore, turn east and be saved? I hope some of the migration specialists may be able to throw some light on this matter.

In questioning the few residents I saw, they concurred in saying that this occurrence had no parallel in their experience.

A few notes on the status of the migration of the species in this disaster may be of interest.

The first migration of Juncos in any number was observed at London

September 30, and a vast number had passed before the date of the storm.

Tree Sparrows were just coming, and were first seen near London October 22.

White-throats began to arrive in numbers September 15, and no more were noted after October 14, one week earlier than their average date of departure.

Golden-crowned Kinglets arrived at London September 25, and the movement had nearly ceased by October 10.

Swamp Sparrows do not come under my observation very much in the fall, and the last was seen September 5.

White-crowned Sparrows passed through without notice.

Two Lincoln Sparrows were seen near London September 5 and 20, October 3 being the latest record in any year.

Not more than one Savanna Sparrow was noted on any day after October 3.

Fox Sparrows were not observed at London until October 28, though the average date of arrival is October 3.

The migration of Winter Wrens reached London September 15, and the last was noted September 20; since then, one specimen only, on October 30. The average date of the last specimen is October 22.

The Saw-whets were a surprise. They are rare in western Ontario, and one sees them only at intervals of many years. Evidently they migrate in considerable numbers.

The length of the Robin flight at London was from September 26 to October 5.

Flickers and Yellow-bellied Sapsuckers were last seen on October 7.

Red-eyed Vireos were last seen October 12, which is the very latest date I have, and have only one other October record.

Blue-headed Vireos were last seen on September 28.

Black-throated Blue Warblers were last seen on September 20, and Black-throated Green on October 3.

Hermit Thrushes had nearly all passed, but were seen until October 16.

I have been a careful student of migrations for many years, but the lesson of this storm shows how many species and individuals one may miss when the birds are silent.— W. E. SAUNDERS, *London, Ontario*.

Early Appearance of Certain Northern Species at Ottawa, Canada.—

Judging by the unusually early arrival of some of our northern wanderers, and the greater abundance of others this fall, there must be queer conditions prevalent to the north of us.

A Hawk Owl (*Surnia ulula caparoch*) was shot and bought to me October 9, and another was seen at the same time. At that time it was very mild here. Several more were brought to a local taxidermist.

The Goshawk (*Accipiter atricapillus*) in the blue plumage, is far more abundant than usual. On October 18 a large, fine female was shot by a farmer across the river, in the act of carrying away a good-sized Plymouth

Rock rooster. On November 3, a boy shot one near the Rifle Range, which had just put itself on the outside of a Ruffed Grouse. Mr. E. G. White noticed two large ones, and shot them, near Pembroke, in the next county; one was in the act of devouring a grouse. The taxidermist got some more to mount, all in the finest blue plumage, save one which I saw in the market, which was in the immature plumage. Mr. E. Beaupré of Kingston writes me, that he never saw so many Goshawks together as this year. There were regular flights of them passing over the city. He saw them almost every day in October, but during the first week in November they were most abundant. He saw seven flying at one time. One he approached quite close while on a stump, tearing a Hairy Woodpecker. Another tried to make a meal of a wooden decoy duck. Many were brought to the local taxidermists.

The Pine Grosbeak (*Pinicola enucleator leucurus*) was also unusually early this year. The first ones were seen November 3 near the Rifle Range; one was found dead on the Experimental Farm, November 5. At the same time Mr. E. G. White reported them as extremely common near Pembroke, Renfrew County. And from then till now, they have stayed here. At first they were more common on the outskirts of the city, in sumac patches, but now they have invaded the city, as they did three years ago, only then they came somewhat later. They stay and feed on the many mountain ash trees in the city.

The Snowy Owl (*Nyctea nyctea*) seems again to have given Ottawa a wide berth, whereas further south many are reported. I have seen only one thus far, which was shot about November 5 up the Gatineau valley, about 30 miles north. Mr. E. G. White reports another one having been seen near Pembroke.

I saw one Richardson's Owl (*Cryptoglaux tengmalmi richardsoni*) only, which had been shot November 16, at Ottawa.—G. EIFRIG, *Ottawa, Canada*.

Audubon's Ornithological Biography.—In 'The Auk,' Vol. XXI, 1904, p. 286, Mr. Reginald H. Howe called attention to a copy of Volume I of this work, which he had purchased, bearing the following imprint: "Philadelphia: Judah Dobson, Agent, 108 Chestnut Street; and H. H. Porter, Literary Rooms, 121 Chestnut St. MDCCCXXXI." Mr. Howe stated that he was unable to find this imprint in any other copy.

Since that time I have made careful search and have only recently found a similar copy. This one has been acquired of the John Crevar Library of Chicago, and bears the presentation inscription to the late William LeBaron, M. D., Entomologist, of Geneva, Ill., in 1835.—RUTHVEN DEANE, *Chicago, Ill.*

RECENT LITERATURE.

Beebe's 'The Bird.'¹ — The scope of this excellent work is indicated by the captions of the seventeen chapters into which it is divided, as follows: 'I. Ancestors' (pp. 1-18), devoted to an account of the early forms of birds, with a discussion of the origin of the bird type and its relation to other vertebrates. 'II. Feathers' (pp. 19-61), treating of their structure, development and arrangement, and of moult and color. 'III. The Framework of the Bird' (pp. 62-102), deals with the skeleton, in comparison with that of other vertebrates. 'IV. The Skull' (pp. 103-115). 'V. Organs of Nutrition' (pp. 116-141). 'VI. The Food of Birds' (pp. 142-164), in reference to its character, mode of procurement, and the special adaptations involved therefor in different groups. 'VII. The Breath of a Bird' (pp. 165-187), or an account of the respiratory organs. 'VIII. Muscles and Nerves' (pp. 188-202). 'IX. The Senses' (pp. 203-222). 'X. Beaks and Bills' (pp. 223-251), their structure and their exceedingly diverse modifications and varied uses. 'XI. Heads and Necks' (pp. 252-284), their peculiarities in different groups and their wonderful adaptations. 'XII. The Body of a Bird' (285-318), in which is treated not merely the variations in its size and form, as correlated with mode of life, but a varied category of other subjects, as the color and texture of the plumage in relation to habits; geographical and other variations in color and their probable causes; adaptive colors, etc. 'XIII. Wings' (pp. 319-352), the various types in relation to modes of flight and manner of life, etc. 'XIV. Feet and Legs' (pp. 353-397), showing variation with function. 'XV. Tails' (398-426), a fruitful subject for illustration with reference to form and use. 'XVI. The Eggs of Birds' (pp. 427-461), and 'XVII. The Bird in the Egg' (pp. 462-482), the latter devoted to the embryology of birds. An 'Appendix' (pp. 483, 484) gives the titles of "a few excellent books relating directly or indirectly to ornithology," and is followed by a full and well-planned topical index.

Other works of much the same scope have appeared in recent years, but none with such a wealth of original illustrations, nor so well adapted to the needs of the general reader and amateur bird student. The treatment is popular, avoiding needless technicalities, well-balanced and eminently original. It is evidently written from the basis of a wide range of first-hand knowledge, and with an inspiration begotten of real interest

¹ American Nature Series | Group II. The Functions of Nature | — | The Bird | Its Form and Function | By | C. William Beebe | Curator of Ornithology of the New York Zoological Park and Life Member of the | New York Zoological Society; Member of the American Ornithologists' | Union and Fellow of the New York Academy of Sciences | Author of "Two Bird-Lovers in Mexico" | With over three hundred and seventy illustrations | chiefly photographed from life | by the Author | [Vignette] New York | Henry Holt and Company | 1906 — Large 8vo, pp. xi + 496.

in the subject. Moot questions are discussed with commendable conservatism, and the book is thus a safe guide to the inexperienced searcher for knowledge.

The author's opportunities for the study of a wide range of bird types in life, through his curatorship of birds at the New York Zoological Park, have given him advantages that few can share, and the pages of 'The Bird' are enriched by many original and hitherto unpublished observations. We note very few slips of any importance, and are therefore surprised to find it stated (p. 297) that the male Bobolink "changes from the buffy female dress to his rich black-and-white spring suit" merely by the wearing off of the brittle feather tips. The context does not lead one to suppose that the male Bobolink acquires his nuptial dress by a full spring moult, which no one better than the author of this book must know occurs, but which for the moment he forgot to imply. There is, as he states, a speedy wearing off of the brown feather-tips *after the spring moult*, beneath which the black is at first more or less veiled.

His accounts of protective coloration and geographical variation, while brief, give a good general statement of the facts, and, as is the case in nearly every instance where broad subjects, open to speculative explanation are touched upon, these topics are treated with commendable reserve. On the whole 'The Bird' fills a peculiar niche of its own, and must prove a mine of welcome information to a wide class of readers.—J. A. A.

Hellmayr on Spix's Types of Brazilian Birds.¹—In the year 1817 the King of Bavaria, Maximilian Joseph I, sent a scientific expedition to explore the rich fauna and flora of Brazil. Dr. J. B. von Spix was the zoölogist and Dr. C. P. von Martius was the botanist of this expedition, one of the most famous and successful of the several scientific expeditions sent out by different European governments during the first half of the nineteenth century for the exploration of the natural history of South America. Spix and Martius reached Rio de Janeiro the 14th of July, 1817, and sailed from Para on their return to Europe on the 14th of June, 1820. During these three years they explored a large part of southern Brazil, and the Amazon from its mouth to eastern Ecuador, including journeys up some of its principal tributaries, as the Rio Negro and the Rio Madeira. The ornithological results, by Spix,² were published in two large quarto volumes, the first in 1824, the second in 1825, under the title 'Avium Species Novæ, quas in itinere per Brasiliam annis 1817-1820,' etc. In this work, according to Hellmayr, about 220 species of birds were described as new or given new names. Of these only about 100 remain in good standing, while a few, through the loss of the types, are not clearly determinable.

¹ Revision der Spix'schen Typen brasilianische Vögel. Von C. E. Hellmayr. Abhandl. der K. B. Akademie der Wissenschaften, II Kl., XXII Bd., III Abt., pp. 563-726, Taf. 1, 2, May 20, 1906.

² Johan Baptist von Spix, born 9 Feb., 1781; died 15 May, 1826.

Spix and Martius were the first explorers to bring to European museums any considerable number of specimens from the Amazon region and the northeastern States of Brazil; in southeastern Brazil they were preceded by Prince Wied, and Spix's names for many supposed new species were forestalled by those of other authors. Spix also designated many other species by new names which had been previously described, through his inattention to the literature of the subject.

In his introductory remarks Hellmayr directs attention to the fact that the plates (hand-colored) in Spix's work differ greatly in the coloring in different copies — a fault sadly not limited to the Spix bird plates!

The Spix-Martius expedition specimens of birds were mounted, according to the custom of that time, and thus have suffered for some seventy years from the fading influence of light, while some have become moth-eaten; the original labels have in many cases been lost, but fortunately the specimens proved in most such cases to be identifiable by the catalogue records. The Spix specimens have now, except in the case of some of the larger species, been unmounted, carefully labeled, and merged with the skin collection of the Munich Museum. It is to be regretted that Spix failed to record, either in his '*Avium Species Novæ*' or on his labels, the exact locality where his specimens were taken, the records, in many cases simply giving 'Brasilia' as the place of capture.

The revision of the Spix material, our author states, occupied him the greater part of two years, and in its identification he did not limit himself to the resources of the Munich Museum but made direct comparison with the necessary specimens in various other European museums, especially with those in the rich collection of Count Berlepsch, to whom he makes acknowledgment for valued assistance in his work. Thus the 'Revision' has been made with exceptional care. Although entitled a 'Revision of Spix's Types of Brazilian Birds,' it is much more than this, as it includes not only the actual types of Spix's new species, but all of the known extant specimens of birds of the Spix-Martius Expedition; and not only this, it includes incidentally the revision of many obscure groups of South American birds, and much critical comment on questions of nomenclature and synonymy, which must prove of advantage to future workers in the same field. Incidentally, also, quite a number of species and subspecies are characterized as new or receive new names. The memoir closes with a valuable concordance, showing the proper modern equivalents of all of the birds included in Spix's work, as interpreted by Dr. Hellmayr.— J. A. A.

Thayer and Bangs on Sonoran Birds.— This is mainly a nominal list¹ of the breeding birds of the Sierra de Antonez, in north central Sonora — a region previously little known. The principal localities are Opodepe, at

¹ Breeding Birds of the Sierra de Antonez, North Central Sonora. By John E. Thayer and Outram Bangs. Proc. Biol. Soc. of Washington, Vol. XIX, pp. 17-22, Feb. 26, 1906.

2000 feet altitude, and La Chumata mine, at 4500 feet altitude. The list (67 species) is based on a collection made by Mr. W. W. Brown, Jr., mainly during the month of May, 1905, and hence at the height of the breeding season. Many nests and eggs were taken. A new subspecies is *Psaltriparus plumbeus cecaumenorum*, and there are technical notes on a few other species.—J. A. A.

Lönnberg on the Birds of South Georgia.—The present memoir¹ is based on collections made on the island of South Georgia by Mr. Erik Sörling for the Swedish Natural History Museum in Stockholm. Sörling, accompanying Captain C. A. Larsen on a whaling voyage to the antarctic seas, was able to spend the period from the middle of November, 1904, to the end of September, 1905, on South Georgia. He had thus nearly a full year on the island and secured important collections and valuable observations, especially on the seals, whales, birds, and fishes. The first important report on the birds of South Georgia was based on the material obtained by the German Antarctic Expedition of 1882–1883, papers on which were published by Pagenstecker and von den Steinen, respectively in 1885 and 1890, by whom 22 species were recognized as occurring on the island, and 19 as breeding. The Swedish Antarctic Expedition of 1902 added, as recorded by Lönnberg, one more to the total number, and also one to the list of breeding birds; Sörling added still another, making 21 known to breed, and raising the total number thus far recorded, including occasional stragglers, to 29. In the present memoir all are treated at greater or less length; of 25 species Sörling obtained specimens, often in series, representing both young and adult, and frequently including skeletons as well as skins. Sörling's field notes, given in abstract or at length, are of special interest, while the author has made his report on the birds a summary of the present knowledge of the ornithology of South Georgia. There is a colored plate of a chick of *Chionis*, color sketches from life of the head and bill of *Nettion georgeium* and of *Phalacrocorax atriceps*, and reproductions of photographs of the King Penguin, Great Skua, and a rookery of *Pygocelis papua*. The only land bird recorded is the Antarctic Pipit (*Anthus antarcticus*).—J. A. A.

Harvie-Brown's 'A Fauna of the Tay Basin.'²—This is the tenth volume of 'The Vertebrate Fauna of Scotland' series, edited, and in part written by J. A. Harvie-Brown and the late Thomas E. Buckley. Following

¹ Contributions to the Fauna of South Georgia. I. Taxonomic and Biological Notes on Vertebrates. By Einar Lönnberg. Sv. Vet. Akademiens Handlingar, Bd. XL, No. 5, 1906, pp. 1–102, pll. i–xii, and 7 text figures. Birds, pp. 50–90, pll. ii, colored, pl. xii, half-tone.

² A Fauna of the Tay Basin & Strathmore. By J. A. Harvie-Brown. Edinburgh, David Douglas, 1906.—Small 4to, pp. i–lxxxvi + 1–377, 21 photogravure plates, 8 text cuts, and 6 maps. Price 30 shillings.

the preface is 'A Short Revision of the past Volumes of this Series' (pp. xvii-xxi), and this is succeeded by 'Annals of the Perthshire Society of Natural Science,' by the president of the Society, Henry Cootes (pp. xxii-xxviii). The next sixty pages are devoted to a detailed account of the topography of the Tay Basin, which comprises a larger area than any other river system in Scotland, comprising "some 3250 square miles. The physical, faunal and floral features of its mountains, glens, and lochs are given at length, with especial reference to their ornithology. The influences governing the dispersal of species, especially in Scotland, are also considered. In the main text of the 'Fauna' the mammals occupy about sixty pages, the birds about three hundred, and the reptiles and Amphibia about six.

The fauna of the higher parts of Scotland has a decidedly arctic tinge, through the presence in the breeding season as such birds as the Wheatear, Snowflake, Ptarmigan, Red-necked Phalarope, Whimbrel, Greenshank, Skua, Black-throated Loon, Fulmar Petrel, and various northern breeding ducks.

As Mr. Harvie-Brown is not a 'splitter,' it is of interest to note that he is able to recognize "three fairly distinct phases of coloration [in the Song Thrush (*Turdus musicus*)] in Scotland alone, viz.: the very dark insular and western form universal in the Outer Hebrides; the ordinary olive-backed bird of our shrubberies and mainland hedgerows; and the very light sand coloured bird of our eastern seaboard"; these phases being due, as he believes, to the effects of climate, or of isolation and climate combined.

The number of species of birds in the Tay Basin is not stated, but the records have evidently been exhaustively examined, and notable fluctuations in the numerical representation of several species at different periods is frequently the subject of comment. Some species have sensibly increased at certain localities, while many have greatly decreased. The comparatively recent increase of the Starling, and its recent wide dispersal over parts of Scotland where it was formerly rare or unknown is noted at length. At present he says: "Except high up among the mountains and in out-of-the-way places, the distribution has become almost universal, and the time may not be far removed when the great armies will coalesce. Then, if I may continue to speak a little metaphorically — '*Then shall come the Deluge.*'"

'A Fauna of the Tay Basin' is prepared with the same care and vast amount of historic research that has characterized the previous volumes of this admirable series, with which it conforms in typographical execution, reflecting the good taste and liberality of Mr. David Douglas, the well-known publisher of this important series of faunal works. The illustrations are especially worthy of note. Eight of the photogravure plates are portraits of local naturalists of note; others show the nests or the nesting haunts of birds, or illustrate characteristic or interesting scenic features. The text illustrations are also photogravures and mostly views of lochs or

cliffs. The maps illustrate the invasion of the Little Auk in 1894-95; the dispersal of the nesting of the Starling and of the Tufted Duck, the Firth of Tay and adjoining region, and there is a general map of the Tay Basin and Strathmore, shaded to show relative elevation of the country.—
J. A. A.

CORRESPONDENCE.

The Concilium Bibliographicum as a Bureau of Ornithological Information.

TO THE EDITORS OF 'THE AUK':—

Dear Sirs:—The Concilium Bibliographicum was founded in 1895 by the International Congress of Zoölogy for the purpose of recording in a permanent way all notices regarding zoölogy published since 1896. Every paper is entered on a bibliographical card, usually with a short statement of the contents, and these cards are most minutely classified. Thus a paper on the Limicolæ of Michigan, with notes on nesting and observations on albinism would receive four entries, Limicolæ, Fauna of Michigan, Nesting, and Coloration. If the paper contained descriptions of new forms, each of these would be noted on a separate card. The cards relating to new species are not as yet printed; but the others are supplied in any desired combination, *e. g.*, cards on the Fauna of Michigan, on Nesting or Bird-song, on Migration, on Coloration, or references to a given group of birds, as Limicolæ or Parrots.

A large portion of the expense of maintaining the Concilium is defrayed by the Swiss government. There is, however, a fee charged for every set of references, depending on the number of cards supplied. Soon after its foundation the Concilium was universally recognized as the central agency of the whole world for such work, and to-day there is no country participating in the scientific movement that does not receive cards, the total number annually distributed aggregating nearly one million.

There are, however, certain strange anomalies in the participation of various constituencies. The most singular fact is that American *ornithologists* have remained aloof. This circumstance paralyses all our efforts at improving this section of the work. We can not feel justified in attributing any large portion of our subsidies for preparing lists that are not used. Nevertheless, with the positive conviction that this is only a transient feature, we have for over ten years never wavered in prosecuting

the work in ornithology. Yet how discouraging it is to day by day file away references to the avifauna of each State in the Union, when the information thus collected with endless pains is never used! That there are imperfections in our work has been inevitable; but the only way to remedy these is for us to come into closer relations with American ornithologists, whom our organization is designed to serve.

I wish to lay this matter before the A. O. U. with the hope that a means may be found for securing the support of the Union and its members. It would be especially pleasing if the A. O. U. could appoint a committee to coöperate in making our work more serviceable.

Respectfully,

HERBERT HAVILAND FIELD.

[It may be added, for the information of our readers, that the American Museum of Natural History, of New York, is a volunteer agency for the distribution of the cards of the Concilium, through which institution they may be ordered. As the cards are held in stock, orders can be filled without delay. They may also be ordered through Edward S. Field, 427 Broadway, New York City.—EDD.]

NOTES AND NEWS.

WILLIAM THOMAS BLANFORD, an Honorary Fellow of the American Ornithologists' Union, died at his residence in Bedford Gardens, Campden Hill, London, on June 23, 1905, at the age of 72 years. Dr. Blanford was an eminent worker in other fields of scientific research as well as in ornithology. His explorations in Abyssinia, Persia, the Peninsula of India, the Himalaya, and other portions of Central Asia, as a geologist, a physical geographer, and zoölogist, gave him a wide range of experience, which fitted him to deal authoritatively with the problems of zoögeography, to which subject he made important contributions, especially as to the faunal subdivisions of the Oriental Region. He published many papers on mammals, reptiles, and mollusks, as well as on birds. He was employed for many years on the Geological Survey of India, to which he was appointed in 1855, and from which he retired in 1882.

His ornithological papers relate mainly to the birds of India, and were published at intervals from 1867 to 1894; he was also the author of two of the bird volumes (Vols. III and IV) of the 'Fauna of British India' (of which seventeen volumes have appeared), of which great work he was the editor. Among his other principal works are: 'Observations on the Geology and Zoölogy of Abyssinia' (1870; birds pp. 285-443); 'Eastern Persia: an Account of the Journeys of the Persian Boundary Commission, 1870-72' (birds, pp. 98-304); 'The Distribution of Vertebrate Animals

in India, Ceylon, and Burma' (Proceedings of the Royal Society of London, Vol. LXVII, 1901, pp. 484-492). The later years of his life were spent in London, in scientific research, where he served also on the Councils of the Royal, Geological, Geographical, and Zoölogical Societies.

SIR WALTER LAWRY BULLER, a Corresponding Fellow of the American Ornithologists' Union, died at Fleet, in Hampshire, England, July 19, 1906, at the age of 68 years. He was born in New Zealand in 1838, where he spent most of his life; he was a lawyer by profession, and held, at different times, several government commissions. He became early interested in birds, and was long recognized as the chief authority on New Zealand ornithology, to which his ornithological writings mainly relate. His 'History of the Birds of New Zealand' (1 vol., 4to, London) was published in 1873, followed by a second edition (2 vols., 4to) in 1887-88, and a 'Supplement' (2 vols., 4to) in 1905-06. He also published a 'Manual of the Birds of New Zealand' (8vo, Wellington) in 1882; and many papers in 'The Ibis,' the 'Proceedings' of the Zoölogical Society of London, and the 'Transactions' of the New Zealand Institute. He was also a good ethnologist, and made contributions to other branches of natural history.

THE A. O. U. Committee on the revision of the Code of Nomenclature presented its report to the Council during the recent session of the A. O. U. Congress held in Washington, November 13-16, 1906. After considerable discussion the report of the Committee was adopted; on only one provision was there much diversity of opinion, either in the Committee or in the Council. This was in relation to the determination of types of genera, in reference to which the Committee submitted majority and a minority reports, the majority report being the one adopted by the Council. This was to the effect that where the types of polytypic genera are not specified by the founder of the genus, and are not determinable by the principle of tautonomy, the first species mentioned as belonging to the genus is to be taken as its type. To avoid too great confusion from a universal enforcement of a 'first species rule' for such cases, the Linnæan genera were exempted from its application. The minority report of the Committee favored the continued use of the so-called 'elimination method,' or the application of the rule of priority. In other respects the old A. O. U. Code is not materially changed, the various amendments introducing no new principle, nor reversing any former ruling; they simply amplify and render more explicit such canons as were open to doubtful interpretation in respect to their full scope and intent.

The Committee on the Nomenclature and Classification of North American Birds submitted a report of progress, showing that the work of preparing the new edition of the Check-List was well advanced, but that much still remained to be accomplished before the manuscript could be given to the printer. A meeting of this Committee was held after the adjournment of the A. O. U. Congress, at which all of the then remaining details

as to the scope and form of the new Check-List were decided, as well as quite a number of cases of nomenclature and the status of forms. The Committee adjourned to meet again in April, to complete the work still in hand.

THE second annual meeting of the National Association of Audubon Societies was held at the American Museum of Natural History in New York City on October 30, 1906. The Treasurer's report showed that the receipts for the year had been \$8,773.67, and the expenditures \$9,316.95, showing a deficit of \$523.54, notwithstanding the utmost economy in administration. Seventeen life members were added during the year, and the fees therefrom added to the endowment fund. The report of the subcommittee of the Board of Directors appointed to complete the negotiations relative to a settlement of the residuary interest of the Association under the will of the late Albert Willcox (see Auk, XXII, Oct. 1906, p. 486) stated that a settlement had been effected whereby the sum of \$231,072 had been acquired by the association. This makes the total legacy of \$331,072 from the will of the late Albert Willcox available for the work of the Association. The following were elected Directors to serve for the term of five years: Frank Bond, of Wyoming; T. Gilbert Pearson, of North Carolina; Mrs. Elizabeth B. Davenport, of Vermont; J. A. Allen, of New York; David Starr Jordan, of California.

The President, in a verbal address, gave a brief account of the work accomplished during 1906; the report, in full, is printed in the November-December issue of 'Bird-Lore' (Vol. VIII, No. 6, pp. 225-284). Referring to the bequest above mentioned it says: "...during the past year, by the magnificent beneficence of one of our members, the late Albert Willcox, the Association has been changed from a weak and struggling Society to a permanent and strong organization with a substantial endowment fund." The report reviews in detail the work of the year, and, as usual, is a document of great ornithological interest aside from the feature of bird protection.

IMPORTANT CHANGE OF ADDRESS.—Members of the A. O. U. and subscribers to 'The Auk' should note the change of address of the Treasurer, given on the second page of the cover of this issue, namely: Dr. Jonathan Dwight, Jr., **134 West 71st Street**, New York City.